



J. F. Baldwin, M. D.

Columbus, - Ohio.

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Columbus,

Ohio.

Nov. 179.



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TRANSACTIONS  
OF THE  
COLLEGE OF PHYSICIANS  
OF PHILADELPHIA.

VOLUME THE ELEVENTH.



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# TRANSACTIONS

OF THE

# COLLEGE OF PHYSICIANS

OF

## PHILADELPHIA.

THIRD SERIES.

VOLUME THE FOURTH.



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# COLLEGE OF PHYSICIANS OF PHILADELPHIA.

1879.

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L I S T  
OF THE  
PRESIDENTS OF THE COLLEGE FROM THE TIME OF ITS  
INSTITUTION.

---

ELECTED.

- 1787. JOHN REDMAN, M.D.
- 1805. WILLIAM SHIPPEN, M.D.
- 1809. ADAM KUHN, M.D.
- 1818. THOMAS PARKE, M.D.
- 1835. THOMAS C. JAMES, M.D.\*
- 1835. THOMAS T. HEWSON, M.D.
- 1848. GEORGE B. WOOD, M.D., LL.D.
- 1879. W. S. W. RUSCHENBERGER, M.D.

\* Died four months after his election.

F E L L O W S  
OF THE  
COLLEGE OF PHYSICIANS OF PHILADELPHIA.

J U L Y, 1879.

[Non-Resident Fellows are marked thus (\*).]

ELECTED

1870. ADLER, JOHN M., M.D.

1859. AGNEW, D. HAYES, M.D., LL.D., Professor of Surgery in the University of Pennsylvania, Surgeon to the Pennsylvania Hospital, Consulting Surgeon to the Orthopaedic Hospital and to St. Christopher's Hospital, and to the Philadelphia and Northern Dispensaries.

1876. ALISON, ROBERT H., M.D., Assistant Physician to the Orthopaedic Hospital and Infirmary for Nervous Diseases.

1867. ALLEN, HARRISON, M.D., Professor of Physiology in the University of Pennsylvania, Surgeon to St. Joseph's Hospital, Consulting Surgeon to the Mission Hospital.

1873. ALLIS, OSCAR H., M.D., Surgeon to the Presbyterian Hospital and to the Howard Hospital.

1869. ANDREWS, T. HOLLINGSWORTH, M.D., Surgeon to the Howard Hospital, Consulting Surgeon to the Hospital of the Good Shepherd, Radnor.

1872. ASHBRIDGE, WILLIAM, M.D., Surgeon to the German Hospital, Surgeon for Out-patients to the Pennsylvania Hospital.

1863. ASHURST, JOHN, JR., M.D., Professor of Clinical Surgery in the University of Pennsylvania, Surgeon to the Episcopal Hospital and to the Children's Hospital, Consulting Surgeon to St. Christopher's Hospital and to the Hospital of the Good Shepherd, Radnor.

**ELECTED**

1865. ASHURST, SAMUEL, M.D.  
1835. ASHMEAD, WILLIAM, M.D.  
1857. ATLEE, WALTER F., M.D., Consulting Physician and Surgeon to St. Luke's Hospital, Bethlehem.  
  
1852. BACHÉ, THOMAS HEWSON, M.D.  
1879. BAKER, WASHINGTON H., M.D., Obstetrician to the State Hospital for Women and Infants, Assistant Physician to the Philadelphia Lying-in Charity and to St. Christopher's Hospital, Assistant Surgeon to the Orthopaedic Hospital, Physician to the Philadelphia Dispensary, etc.  
1876. BALDWIN, LOUIS K., M.D., Examining Physician to the Hospital of the Good Shepherd, Radnor.  
1873. BAXTER, H. F., M.D.  
1874. BEECHER, A. C. W., M.D.  
1860. BENNER, HENRY D., M.D.  
1874. BENNETT, W. H., M.D., Physician to the Episcopal Hospital and to St. Christopher's Hospital.  
1871. BERTOLET, R. M., M.D.  
\*1866. BLACK, J. J., M.D.  
\*1867. BOARDMAN, CHARLES H., M.D.  
1859. BOKER, CHARLES S., M.D., Surgeon to St. Joseph's Hospital.  
1842. BRIDGES, ROBERT, M.D., Emeritus Professor of Chemistry in the Philadelphia College of Pharmacy.  
1856. BRINTON, JOHN H., M.D., Lecturer on Operative Surgery in the Jefferson Medical College, and Surgeon to the Hospital of the same, Surgeon to the Philadelphia Hospital and to St. Joseph's Hospital.  
1878. BRUEN, EDWARD T., M.D., Lecturer on Urinary Pathology in the University of Pennsylvania, Physician to the Philadelphia Hospital, Examining Physician to the Hospital of the Good Shepherd, Radnor.  
1879. BUCK, W. PENN, M.D.  
\*1851. BULLOCK, WILLIAM R., M.D.  
1870. BURNETT, C. H., M.D., Aurist to the Presbyterian Hospital, Surgeon to the Philadelphia Infirmary for Diseases of the Ear.

ELECTED

- \*1875. BURNS, ROBERT, M.D.
- 1863. BURPEE, DAVID, M.D., Physician to the Howard Hospital.
- 1868. CHESTON, D. MURRAY, M.D., Physician to the Children's Hospital.
- 1873. CLARK, LEONARDO S., M.D.
- 1872. CLEEMANN, RICHARD A., M.D., Physician to St. Mary's Hospital.
- \*1842. CLYMER, MEREDITH, M.D.
- 1827. COATES, BENJAMIN HORNOR, M.D.
- 1871. COHEN, J. SOLIS, M.D., Lecturer on Laryngoscopy and Diseases of the Throat in the Jefferson Medical College, and Physician to the Hospital of the same, Physician to the German Hospital.
- \*1870. CORBIT, WILLIAM B., M.D.
- \*1857. CORSE, JAMES M., M.D.
- 1866. CRUICE, R. B., M.D., House Surgeon to St. Joseph's Hospital.
- 1873. CRUICE, W. R., M.D.
- 1868. CUMMISKEY, JAMES, M.D.
- 1858. DA COSTA, J. M., M.D., Professor of the Principles and Practice of Medicine in the Jefferson Medical College, Physician to the Pennsylvania Hospital, Consulting Physician to the Children's Hospital, to the Northern Dispensary, and to the Pennsylvania Free Dispensary for Skin Diseases.
- 1859. DARRACH, JAMES, M.D., Consulting Surgeon to the Germantown Hospital.
- 1866. DARRACH, WILLIAM, M.D., Physician to the Germantown Hospital.
- 1874. DEAKYNE, A. C., M.D.
- \*1870. DEAL, L. J., M.D.
- 1864. DOWNS, R. N., M.D., Consulting Physician to the Germantown Hospital.

**ELECTED**

1864. DUEER, E. L., M.D., Accoucheur to the Philadelphia Hospital, Surgeon to the State Hospital for Women and Infants, Visiting Physician to the Preston Retreat.

1871. DUHRING, L. A., M.D., Clinical Professor of Skin Diseases in the Hospital of the University of Pennsylvania, Physician to the Dispensary for Skin Diseases.

1863. DUNGLISON, RICHARD J., M.D.

\*1871. DUNGLISON, THOMAS R., M.D.

\*1849. DUNOTT, JUSTUS, M.D.

1860. DUNTON, WILLIAM R., M.D., Consulting Physician to the Germantown Hospital.

1868. EVANS, H. Y., M.D., Physician to the Charity Hospital.

1872. FINN, W. H., M.D., Surgeon to St. Christopher's Hospital.

1866. FISCHER, EMIL, M.D.

1862. FORBES, WILLIAM S., M.D., Demonstrator of Anatomy in the Jefferson Medical College, Surgeon to the Episcopal Hospital.

1870. FORD, W. H., M.D.

1831. FOX, GEORGE, M.D.

1864. FRICKE, ALBERT, M.D.

1870. GARDETTE, E. B., M.D.

\*1873. GERIARD, GEORGE S., M.D.

1864. GETCHELL, F. H., M.D., Gynæcologist to the Hospital of the Jefferson Medical College, Obstetric Physician to the Catharine Street Dispensary.

\*1846. GIBBONS, HENRY, M.D.

\*1848. GIVEN, ROBERT A., M.D.

\*1854. GOBRECHT, WILLIAM H., M.D.

1868. GOODELL, WILLIAM, M.D., Professor of Clinical Gynæcology in the University of Pennsylvania, Physician in Charge of the Preston Retreat, Consulting Physician to the Lying-in Department of the Northern Dispensary.

## ELECTED

1867. GOODMAN, H. EARNEST, M.D., Surgeon to Wills Hospital and to the Orthopaedic Hospital, Consulting Surgeon to the State Hospital for Women and Infants.

1864. GRANGER, WILLIAM H., M.D.

1857. GREEN, ALFRED, M.D.

1870. GRIER, M. J., M.D.

1842. GRISCOM, JOHN D., M.D.

1857. GROSS, SAMUEL D., M.D., LL.D., D.C.L. Oxon., Professor of the Principles and Practice of Surgery in the Jefferson Medical College, Consulting Surgeon to the Orthopaedic Hospital.

1868. GROSS, SAMUEL W., M.D., Lecturer on Diseases of the Urino-Genital Organs in the Jefferson Medical College and Surgeon to the Hospital of the same, Surgeon to the Philadelphia Hospital, Consulting Surgeon to the Northern Dispensary and to the Pennsylvania Free Dispensary for Skin Diseases.

1871. GROVE, JOHN H., M.D., Surgeon to St. Mary's Hospital.

1863. HALL, A. DOUGLASS, M.D., Surgeon to Wills Hospital.

1865. HAMILTON, GEORGE, M.D.

\*1859. HAMMOND, WILLIAM A., M.D.

1865. HARLAN, GEORGE C., M.D., Surgeon to Wills Hospital, Ophthalmic and Aural Surgeon to the Children's Hospital.

1863. HARLOW, LEWIS D., M.D.

1862. HARRIS, ROBERT P., M.D., Physician to the Franklin Reformatory Home.

1847. HARTSHORNE, EDWARD, M.D.

\*1851. HARTSHORNE, HENRY, M.D.

1868. HASSLER, FERDINAND A., M.D.

\*1849. HASTINGS, JOHN, M.D.

1855. HATFIELD, NATHAN L., M.D., Consulting Physician to the Northern Dispensary.

\*1865. HAYES, ISAAC I., M.D.

1872. HAYS, I. MINIS, M.D.

**ELECTED**

1878. HESS, ROBERT J., M.D.

1853. HEWSON, ADDINELL, M.D.

1872. HINKLE, A. G. B., M.D.

1863. HODGE, H. LENOX, M.D., Demonstrator of Anatomy in the University of Pennsylvania, Surgeon to the Presbyterian Hospital and to the Children's Hospital, Consulting Physician to the Lying-in Department of the Northern Dispensary, Consulting Surgeon to the Hospital for Relief of Diseases of the Rectum and Urinary Organs.

1852. HOOPER, WILLIAM H., M.D.

1879. HOPKINS, WILLIAM BARTON, M.D.

1867. HORN, GEORGE H., M.D.

1868. HOWELL, SAMUEL B., M.D., Professor of Mineralogy and Geology in the University of Pennsylvania.

1854. HUNT, WILLIAM, M.D., Surgeon to the Pennsylvania Hospital and to the Orthopaedic Hospital.

1871. HUNTER, CHARLES T., M.D., Demonstrator of Surgery in the University of Pennsylvania, Surgeon for Out-patients to the Pennsylvania Hospital.

1863. HUTCHINSON, JAMES H., M.D., Physician to the Pennsylvania Hospital and to the Children's Hospital.

1871. INGHAM, JAMES V., M.D., Obstetrician to the State Hospital for Women and Infants.

1871. JENKS, WILLIAM F., M.D., Surgeon to the State Hospital for Women and Infants, Consulting Physician to the Lying-in Department of the Northern Dispensary.

1864. JONES, S. P., M.D., Assistant Physician to the Pennsylvania Hospital for the Insane.

1867. JUDSON, OLIVER A., M.D.

1877. KEATING, JOHN M., M.D., Lecturer on Diseases of Children in the University of Pennsylvania, Physician to the Philadelphia Hospital and to St. Joseph's Hospital, Assistant Physician to the Children's Hospital and to the Orthopaedic Hospital and Infirmary for Nervous Diseases.

ELECTED

1849. KEATING, WILLIAM V., M.D., Physician to St. Joseph's Hospital.

1867. KEEN, WILLIAM W., M.D., Surgeon to St. Mary's Hospital, Consulting Surgeon to the Mission Hospital.

1852. KENNEDY, ALFRED L., M.D.

\*1844. KING, CHARLES R., M.D.

1864. KING, WILLIAM M., M.D., U.S.N.

1875. KIRKBRIDE, J. J., M.D., Physician for Out-patients to the Pennsylvania Hospital.

1839. KIRKBRIDE, THOMAS S., M.D., Physician-in-Chief to the Pennsylvania Hospital for the Insane.

1848. KLAPP, JOSEPH, M.D., Physician to the Howard Hospital.

\*1865. LA ROCHE, C. PERCY, M.D.

1868. LEAVITT, THADDEUS L., M.D., Physician to the Germantown Hospital.

1864. LEEDOM, JOHN M., M.D.

1851. LEIDY, JOSEPH, M.D., LL.D., Professor of Anatomy in the University of Pennsylvania.

1877. LEWIS, MORRIS J., M.D., Assistant Physician to the Children's Hospital, and to the Orthopaedic Hospital and Infirmary for Nervous Diseases.

1855. LEWIS, FRANCIS W., M.D.

1849. LEWIS, SAMUEL, M.D.

1836. LITTELL, S., M.D., Consulting Surgeon to the Philadelphia Dispensary, Emeritus Surgeon to Wills Hospital.

\*1847. LOGAN, J. DICKINSON, M.D.

1877. LONGSTRETH, MORRIS, M.D., Lecturer on Pathological Anatomy in the Jefferson Medical College, Physician for Out-patients, and Pathologist and Curator, to the Pennsylvania Hospital.

1849. LUDLOW, JOHN L., M.D., Physician to the Philadelphia Hospital and to the Presbyterian Hospital.

1875. McCLELLAN, GEORGE, M.D.

1871. McFERRAN, J. A., M.D., Physician to the Gynaecological Hospital and Infirmary for Diseases of Children.

## ELECTED

- \*1850. MAYER, EDWARD H., M.D.
- 1868. MEARS, J. EWING, M.D., Demonstrator of Surgery in the Jefferson Medical College and Gynaecologist to the Hospital of the same, Surgeon to St. Mary's Hospital.
- 1875. MEIGS, ARTHUR V., M.D., Assistant Physician to the Children's Hospital, Physician for Out-patients to the Pennsylvania Hospital.
- 1856. MEIGS, JAMES AITKEN, M.D., Professor of the Institutes of Medicine and of Medical Jurisprudence in the Jefferson Medical College, Physician to the Pennsylvania Hospital.
- 1843. MEIGS, JOHN FORSYTH, M.D., Physician to the Pennsylvania Hospital, Consulting Physician to the Children's Hospital.
- 1856. MITCHELL, S. WEIR, M.D., Physician to the Orthopaedic Hospital and Infirmary for Nervous Diseases, Consulting Physician to the State Hospital for Women and Infants.
- 1842. MOEHRING, GOTTHILF, M.D.
- 1863. MOREHOUSE, GEORGE R., M.D., Physician to St. Joseph's Hospital.
- 1839. MORRIS, CASPAR, M.D.
- 1856. MORRIS, J. CHESTON, M.D., Consulting Physician to the Mission Hospital.
- 1861. MORTON, THOMAS G., M.D., Surgeon to the Pennsylvania Hospital, to the Orthopaedic Hospital, and to the Jewish Hospital, Emeritus Surgeon to Wills Hospital.
- 1864. MOSS, WILLIAM, M.D.
- 1865. NEBINGER, ANDREW, M.D., Physician to St. Mary's Hospital.
- 1846. NEILL, JOHN, M.D., Emeritus Professor of Clinical Surgery in the University of Pennsylvania.
- 1869. NORRIS, HERBERT, M.D., Physician to the Catharine Street Dispensary.
- 1865. NORRIS, ISAAC, Jr., M.D.
- 1870. NORRIS, JOHN C., M.D.

**ELECTED**

1866. NORRIS, WILLIAM F., M.D., Clinical Professor of Diseases of the Eye in the Hospital of the University of Pennsylvania, Surgeon to Wills Hospital.

1858. PACKARD, JOHN H., M.D., Surgeon to the Episcopal Hospital.

1863. PAGE, EDWARD A., M.D., Surgeon to St. Joseph's Hospital.

1835. PANCOAST, JOSEPH, M.D., Emeritus Professor of General, Descriptive, and Surgical Anatomy in the Jefferson Medical College.

1864. PANCOAST, WILLIAM H., M.D., Professor of General, Descriptive, and Surgical Anatomy in the Jefferson Medical College, Surgeon to the Philadelphia Hospital, Consulting Surgeon to the Charity Hospital and to the Pennsylvania Free Dispensary for Skin Diseases.

\*1854. PARRISH, JOSEPH, M.D.

\*1835. PAUL, JOHN MARSHALL, M.D.

1839. PEACE, EDWARD, M.D.

1854. PENROSE, R. A. F., M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children in the University of Pennsylvania, Consulting Obstetrician to the State Hospital for Women and Infants, Visiting Physician to the Preston Retreat.

1868. PEPPER, WILLIAM, M.D., Professor of Clinical Medicine in the University of Pennsylvania, Physician to the Philadelphia Hospital and to the Children's Hospital, Consulting Physician to the Mission Hospital.

1872. PORTER, WILLIAM G., M.D., Surgeon to the Presbyterian Hospital and to the Philadelphia Hospital.

1868. RAY, ISAAC, M.D.

1866. REED, THOMAS B., M.D., Surgeon to the Presbyterian Hospital, Microscopist to the Philadelphia Hospital.

1842. REESE, JOHN J., M.D., Professor of Medical Jurisprudence in the University of Pennsylvania, Physician to St. Joseph's Hospital, and to the Gynaecological Hospital and Infirmary for Diseases of Children.

## ELECTED

1853. RHOADS, JAMES E., M.D.

1871. RICHARDSON, ELLIOT, M.D., Lecturer on Practical Obstetrics in the University of Pennsylvania, Surgeon for Out-patients to the Pennsylvania Hospital, Obstetric Physician to the Philadelphia Dispensary, Physician to the Catharine Street Dispensary.

1869. RICHARDSON, JOSEPH G., M.D., Professor of Hygiene and Demonstrator of Histology in the University of Pennsylvania, Physician to the Presbyterian Hospital, Physician for Out-patients and Microscopist to the Pennsylvania Hospital.

\*1857. RICHARDSON, TOBIAS G., M.D.

1867. ROBERTS, JACOB, M.D.

1878. ROBERTS, JOHN B., M.D., Lecturer on Anatomy in the Philadelphia School of Anatomy and Operative Surgery.

1843. RODMAN, LEWIS, M.D., Visiting Physician to the Preston Retreat.

1857. ROGERS, ROBERT E., M.D., Professor of Chemistry in the Jefferson Medical College.

1838. RUSCHENBERGER, W. S. W., M.D., U. S. N.

\*1852. SARGENT, FITZ WILLIAM, M.D.

\*1864. SARGENT, WINTHROP, M.D.

1866. SCHAFER, CHARLES, M.D.

1870. SCHELL, HENRY S., M.D., Surgeon to St. Mary's Hospital and to Wills Hospital.

1875. SEYFERT, THEODORE H., M.D., Physician to the Gynæcological Hospital and Infirmary for Diseases of Children.

1877. SHAKESPEARE, EDWARD O., M.D., Lecturer on Refraction and Accommodation of the Eye, and on Operative Ophthalmic Surgery, in the University of Pennsylvania, Pathologist and Ophthalmologist to the Philadelphia Hospital.

1868. SHAPLEIGH, E. B., M.D.

1876. SHIPPEN, EDWARD, M.D., U. S. N.

1870. SILLIMAN, HENRY R., M.D.

1873. SIMPSON, JAMES, M.D., Physician to St. Mary's Hospital.

**ELECTED**

1872. SINKLER, WHARTON, M.D., Physician to the Episcopal Hospital, and to the Orthopædic Hospital and Infirmary for Nervous Diseases.

1857. SLOCUM, ALFRED M., M.D.

1863. SMITH, ALBERT H., M.D., Physician to and Lecturer on Obstetrics in the Philadelphia Lying-in Charity, Visiting Physician to the Preston Retreat, Consulting Physician to the Hospital of the Good Shepherd, Radnor.

1863. SMITH, A. K., M.D., U. S. A.

1864. SMITH, EDWARD A., M.D.

\*1856. SMITH, R. K., M.D.

1870. SMYTH, FRANCIS G., M.D.

1864. SPOONER, EDWARD A., M.D.

1875. STARR, LOUIS, M.D., Physician to the Episcopal Hospital and Assistant Physician to the Children's Hospital.

1842. STILLÉ, ALFRED, M.D., LL.D., Professor of the Theory and Practice of Medicine in the University of Pennsylvania, Consulting Physician to the State Hospital for Women and Infants.

1846. STOCKER, ANTHONY E., M.D.

1871. STRAWBRIDGE, GEORGE, M.D., Clinical Professor of Diseases of the Ear in the Hospital of the University of Pennsylvania, Surgeon to Wills Hospital, Ophthalmic Surgeon to the Presbyterian Hospital, Surgeon to the Eye and Ear Department of the Philadelphia Dispensary.

1855. STROUD, WILLIAM D., M.D.

1867. TAYLOR, R. R., M.D.

1867. THOMAS, CHARLES H., M.D.

1869. THOMSON, WILLIAM, M.D., Ophthalmic Surgeon to the Hospital of the Jefferson Medical College, Emeritus Surgeon to Wills Hospital.

1852. TIEDEMANN, HENRY, M.D.

\*1853. TILDEN, W. P., M.D.

1870. TURNER, A. PAUL, M.D.

**ELECTED**

1866. TYSON, JAMES, M.D., Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, Physician to the Philadelphia Hospital.

\*1852. TYSON, JAMES L., M.D.

1864. VANDYKE, E. B., M.D.

1873. VAN HARLINGEN, ARTHUR, M.D., Assistant Physician to the Dispensary for Skin Diseases.

1852. WALLACE, ELLERSLIE, M.D., Professor of Obstetrics and Diseases of Women and Children in the Jefferson Medical College, Consulting Obstetrician to the State Hospital for Women and Infants, Visiting Physician to the Preston Retreat, Consulting Physician to the Lying-in Department of the Northern Dispensary.

1873. WALLACE, W. H., M.D.

\*1839. WARRINGTON, JOSEPH, M.D.

1875. WEBB, WILLIAM H., M.D.

1863. WELLS, W. LEHMAN, M.D.

1864. WEST, HILBORNE, M.D.

1878. WHITE, J. WILLIAM, M.D., Lecturer on Venereal Diseases in the University of Pennsylvania, Surgeon to the Philadelphia Hospital.

1868. WILLIAMS, HORACE, M.D., Obstetrician to the State Hospital for Women and Infants, Obstetric Physician to the Philadelphia Dispensary, Physician to the Howard Hospital.

1878. WILLIAMSON, JESSE, M.D., Surgeon to the Howard Hospital.

1851. WILSON, ELLWOOD, M.D., Consulting Physician to the Philadelphia Lying-in Charity, Visiting Physician to the Preston Retreat.

1874. WILSON, J. C., M.D., Lecturer on Physical Diagnosis in the Jefferson Medical College and Physician to the Hospital of the same, Physician to the Philadelphia Hospital.

1871. WISTAR, THOMAS, M.D.

**ELECTED**

1848. WISTER, CASPAR, M.D., Consulting Physician to the Philadelphia Dispensary.

1852. WISTER, OWEN JONES, M.D., Consulting Surgeon to the Germantown Hospital.

1865. Wood, HORATIO C., Jr., M.D., Professor of Materia Medica, Pharmacy and General Therapeutics in the University of Pennsylvania and Clinical Professor of Diseases of the Nervous System in the Hospital of the same, Physician to the Philadelphia Hospital.

1866. Woods, D. F., M.D., Physician to the Presbyterian Hospital.

1878. WORMLEY, THEODORE G., M.D., LL.D., Professor of Chemistry in the University of Pennsylvania.

1860. WURTS, CHARLES STEWART, M.D.

1861. YARROW, THOMAS J., M.D.

\*1840. ZANTZINGER, WILLIAM S., M.D.

[It is particularly requested that any change of appointment, etc., may be communicated to the Committee of Publication before the first of July, in each year, in order that the List may be made as correct as possible.]



## ASSOCIATES.

[Limited to Fifty, of whom Twenty may be Foreigners ]

**ELECTED**

- 1873. ACLAND, HENRY W., M.D., F.R.S., Oxford, England.
- 1869. ALVARENGA, P. F. DA COSTA, Lisbon, Portugal.
- 1847. ATLEE, JOHN L., M.D., Lancaster, Pennsylvania.
- 1876. BALDWIN, W. O., M.D., Montgomery, Alabama.
- 1877. BARNES, ROBERT, M.D., London, England.
- 1876. BARKER, FORDYCE, M.D., New York.
- 1876. BIGELOW, HENRY J., M.D., Boston, Massachusetts.
- 1876. BILLINGS, JOHN S., M.D., U. S. A., Washington, District of Columbia.
- 1876. BOWDITCH, HENRY I., M.D., Boston, Massachusetts.
- 1865. BUTCHER, R. G. H., M.D., Dublin, Ireland.
- 1877. BYFORD, WILLIAM H., M.D., Chicago, Illinois.
- 1877. CHAILLÉ, STANFORD E., M.D., New Orleans, Louisiana.
- 1848. CHRISTISON, SIR ROBERT, Bart., M.D., D.C.L., LL.D., Edinburgh, Scotland.
- 1876. CLARK, ALONZO, M.D., New York.
- 1876. COMEGYS, C. G., M.D., Cincinnati, Ohio.
- 1876. CORSON, HIRAM, M.D., Norristown, Pennsylvania.
- 1876. DAVIS, N. S., M.D., Chicago, Illinois.
- 1876. DONALDSON, F., M.D., Baltimore, Maryland.
- 1868. FLINT, AUSTIN, M.D., New York.
- 1878. FOTHERGILL, J. MILNER, M.D., London, England.
- 1876. GREEN, TRAILL, M.D., Easton, Pennsylvania.

ELECTED

1852. HALL, ARCHIBALD, M.D., Canada.  
1868. HAMILTON, FRANK H., M.D., LL.D., New York.  
1876. HODGEN, JOHN T., M.D., St. Louis, Missouri.  
1874. JACKSON, J. HUGHINGS, M.D., London, England.  
1876. JOHNSON, GEORGE, M.D., F.R.S., London, England.  
1876. JOHNSTON, CHRISTOPHER, M.D., Baltimore, Maryland.  
1876. JONES, JOSEPH, M.D., New Orleans, Louisiana.  
1876. KINLOCH, R. A., M.D., Charleston, South Carolina.  
1876. KING, JAMES, M.D., Pittsburgh, Pennsylvania.  
1877. LISTER, JOSEPH, F.R.S., London, England.  
1865. MACLEOD, G. H. B., M.D., Edinburgh, Scotland.  
1876. MOORE, E. M., M.D., Rochester, New York.  
1876. MOWRY, R. B., M.D., Allegheny City, Pennsylvania.  
1873. OGLE, JOHN W., M.D., London, England.  
1874. PAGET, SIR JAMES, Bart., D.C.L., LL.D., F.R.S., London,  
England.  
1842. PARKER, PETER, M.D., Washington, District of Columbia.  
1876. PARKER, WILLARD, M.D., New York.  
1873. PEACOCK, THOMAS B., M.D., London, England.  
1876. POLLACK, A. M., M.D., Pittsburgh, Pennsylvania.  
1876. PORCHER, F. PEYRE, M.D., Charleston, South Carolina.  
1869. VALCOURT, TH. DE, Cannes, France.  
1857. VALERY, GAETANO, Florence, Italy.  
1861. VELASCO, PEDRO GONZALES, Madrid, Spain.  
1860. WALther, HERMANN, Dresden, Saxony.

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## N O T I C E.

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THE present volume of TRANSACTIONS contains the papers read before the College from August, 1877, to July, 1879, inclusive.

The Committee of Publication thinks it proper to say that the College holds itself in no way responsible for the statements, reasonings, or opinions set forth in the various papers published in its Transactions.

MEMOIR  
OF  
JOHN RODMAN PAUL, M.D.,  
LATE TREASURER OF THE COLLEGE.

By  
S. LITTELL, M.D.

[Read December 5, 1877.]

---

JOHN RODMAN PAUL, the eldest son of the late James Paul, was born on the 24th of January, 1802.

His father was a prominent merchant of Philadelphia, doing business under the firm-name of Paul and Watson, and largely interested in the East India trade. His remote ancestors—landholders and farmers by occupation, and Quakers by religious profession—emigrated from Yorkshire, England, towards the close of the seventeenth century, and settled at Abington, Montgomery County, Pennsylvania. His mother, Elizabeth Rodman—pleasant remembrances of whom are cherished by all who knew her—was the daughter of John Rodman, formerly Sheriff of Burlington County, New Jersey; whose ancestor, the first John Rodman, removed to Barbadoes in 1679, his two sons emigrating to this country, and establishing themselves, one in New Bedford, Massachusetts, and the other in New Jersey.

Dr. Paul was a bright, vivacious youth, of retentive memory and good general ability; and much care appears to have been expended upon his early education. After some preparatory tuition under the direction of competent teachers, he was

sent abroad to a select school, consisting of a class of twelve boys under the charge of the Rev. Mr. Hunt, whence he was removed to Clermont Academy, or College, as it was then called, near Philadelphia. In due season he entered, a Freshman, the Department of Arts in the University of Pennsylvania, and graduated, the first honor of his class, in 1820, delivering the Latin oration at the Commencement.

Various circumstances combined to influence his choice of medicine as the pursuit of his life; and he began its study under the auspices of his friend and the family physician, Dr. Joseph Parrish, a gentleman distinguished alike by his private worth and professional eminence. Dr. Parrish was assisted in the instruction of his class by several able associates, among whom were Dr. George B. Wood, the beloved and venerated President of the College; Dr. Richard Harlan, the eminent naturalist; and Dr. Nathan Shoemaker. Some changes were made at a later period, and the auxiliary staff was strengthened by the accession of Dr. John Rhea Barton. It was one of the largest of the private schools of the country—a distinction partly due to the magnetic influence of its chief, and partly to the excellence of the instruction there imparted. The lectures of some of the gentlemen mentioned, those of Dr. Wood particularly, would have compared not unfavorably in style, thoroughness, and adaptation to the wants of the pupils, with those delivered in the wider and more ambitious sphere of the university. Drs. Chapman, Physick and Gibson occupied respectively the chairs of Medicine, Anatomy and Surgery, in that institution, and the well-merited reputation and prestige of the professors covered, in some measure, the defects of their teaching.<sup>1</sup> It was through

<sup>1</sup> Drs. James, Hare and Coxe were professors of Obstetrics, Chemistry and Materia Medica. Horner and Lawrence were assistants to the Anatomists.

no fault of theirs that the curriculum was not more complete. Dr. Physick had been transferred from the surgical to the anatomical chair, which any competent person of less note would have filled as well, and the wealth of his long experience in his congenial department was therefore lost to the students. The courses were all too short and imperfect. Several of the branches, annually begun *ab initio*, were never finished. In the anatomical theatre, for instance, nearly one-third of each term was devoted to osteology, which could have been as well, or better, studied at home; other matters of equal or greater importance being either cursorily treated, or not noticed at all. The anatomical instruction was moreover merely descriptive, with the least imaginable infusion of physiological or pathological information. In many points it was as the early dawn to the fuller light of the morning. The pupil whose public instruction was not supplemented by systematic and thorough private teaching, would therefore have necessarily carried away with him a very imperfect knowledge of the subjects professed to be taught. Under these circumstances, the previous training by Drs. Parrish and Wood became invaluable; the one contributing the results of his strong native sagacity and extensive experience, anticipating on several points the more scientific revelations of a later age; the other by his method

cal Chair, and looking forward to its reversion. Dr. John D. Godman, entering rather later on his brief and brilliant career, was regarding it with his *ingenium perferendum* as the goal of his ambition, to which similar positions, tendered him in Baltimore and New York, were merely introductory. He declared to the writer that he intended to accomplish his purpose by desert alone—without taking any measures, soliciting a single vote, or asking for the influence of any one. He would “compel the trustees to elect him by deserving it.”

and minuteness elucidating and exhausting the topics which he discussed, and both exhibiting in their lives and deportment a high ideal of all that was truthful, elevated, urbane, and refined.

Under such instructors the foundations of medical education were broadly and firmly laid. Mr. Paul, profiting by the advantages which he enjoyed, applied himself with diligence to his studies, and assumed from the beginning a prominent position among his fellows. Proceeding in 1823, with a mind well imbued with the principles of his profession, to his examination for the degree of Doctor of Medicine, he immediately afterwards embarked on a voyage to Europe—then much less common than now—in company with his relative Dr. John Marshall Paul (who had graduated the preceding year), with the view of still further qualifying himself for practice. On this occasion he frequented the chief hospitals of Paris; attended the lectures of the distinguished physicians and surgeons, Corvisart, Broussais, Dupuytren, Larrey, etc., then flourishing there; and availed himself of the leisure afforded by the summer vacations to visit other parts of the continent—Switzerland, Italy, Germany, the Netherlands—and Great Britain also. Returning to the United States in 1825, he had the inestimable advantage of perfecting his medical education by two years' residence as *Interne* of the Pennsylvania Hospital. Thus thoroughly versed in the theory, and initiated into the practice, of his profession, he announced himself a candidate for public employment by taking office in his father's residence in Third Street below Pine, whence, on his marriage, he removed to a house nearly opposite; changing his location only—as larger accommodation became necessary—to a mansion in Pine Street below Third. Here he continued in a steadily in-

creasing and ultimately lucrative practice until the year 1844, when, his father having died and the care of his estate demanding more time than was compatible with due devotion to professional duty, he retired altogether from active business.

In 1828, Dr. Paul was united in marriage to Elizabeth Duffield, the eldest daughter of the late Dr. Henry Neill, formerly Vice-President of the College; a woman of great loveliness of disposition, and admirably adapted by her many virtues to dignify and adorn domestic life. His cup of happiness was now full to overflowing; and “if ever lot was prosperously cast,” that lot might be truly said to have been his. Indeed, the world had little more that it could bestow upon him. His fortune was ample; his amiable companion realized in all its fulness the description drawn by Inspiration of a good wife,<sup>1</sup> and he was sensible of the value of his possession; his children, fulfilling his fondest expectations, were growing like olive branches around his table; his family relations were all pleasant; sorrow had not yet invaded his sanctuary; the present was filled with the charities and amenities of social converse; and the future was bright with the bow of promise. Years rolled peacefully and almost imperceptibly along; and “the smooth current of domestic joy” flowed with uninterrupted tranquillity, until it was rudely checked by the death of Mrs. Paul in 1866.

We are everywhere taught in the Divine Word that it is good to be afflicted; and observation and experience confirm the lesson. The author of the *Night Thoughts* exclaims with grateful fervor—

“ Amid my list of blessings infinite,  
Stand this the foremost, that my heart has bled ;”

<sup>1</sup> Proverbs xxxi. 10-31.

and pronounces that man unhappy who has never known affliction. It came upon our friend in all the anguish of a great and crushing bereavement. But it was received with humble submission ; and, soothed--as far as such grief can be soothed --by the kind sympathy of family and friends, was borne with exemplary equanimity and resignation.

As a physician, Dr. Paul was a close observer of the phenomena of disease ; simple, judicious, and conservative in its treatment. He was kind and attentive in his ministrations to the sick; and the efficiency and conscientiousness with which he discharged the responsibilities of his vocation, won for him the confidence and respect of his patients.

In ceasing to be a practitioner of medicine he had no intention of severing altogether his connection with a profession which it had been the great object of his early ambition to acquire. He was accordingly chosen one of the first managers of Wills Hospital for the Diseases of the Eye, and succeeded his preceptor, Dr. Parrish, in the Presidency of the Board ; the duties of which office he continued sedulously to perform during the long period of nearly thirty years. In 1838 he became Treasurer of the College of Physicians, and held that position by annual re-election, with universal satisfaction, until his death. Manifesting, as he ever did, a lively interest in public affairs, national, State, and municipal, he suffered himself in 1844 to be elected a member of the city Councils ; but, this being an uncongenial sphere, he served one term only ; nor was he afterwards a candidate for any political situation. About this time, also, he was appointed a director of the Girard College, and assigned to a place on the Building Committee. His even temperament, sound judgment, business capacity, strict integrity, and personal interests, rendered him a valuable member of several financial

and manufacturing corporations. He acted for ten years, from 1859, as Treasurer and Agent of the Washington Manufacturing Company, Gloucester, New Jersey; and filled, during the third of a century, the post of President of the Gloucester Land Company; in both of which associations he had made early and large investment. He was a Director of the Philadelphia Contributionship for the Insurance of Houses from loss by Fire; of the Bank of Commerce; and of the Philadelphia Savings Bank. In 1869 he was made a Trustee of his Alma Mater, the University of Pennsylvania. He was also an Inspector of the County Prison—a station conferred by judicial appointment—and found in it a means of benefiting the community by improving the condition of an unhappy and much neglected class of offenders.

It might be supposed that a life thus occupied would not have many idle or unemployed moments to spare from the paramount demands of business; and yet so orderly and systematic was Dr. Paul in all his ways, that he found abundant leisure for the requirements of family intercourse, and the courtesies of a cultivated society. His sober and practical view of things, his forecast, prudence, and common sense, caused his opinions to be regarded with respect and deference by his associates in the various societies with which he was connected. He possessed in an uncommon degree the power of self-restraint, and would remain serene and unmoved amid the stormiest discussion. His disposition was cheerful—in early life playful and gay; and he abounded in *bon-mots*, witticisms, anecdote, and repartee. Amiable in his intercourse with his friends, and affectionate in his family relations, he was with others—more especially in the latter part of his life—rather grave and reserved. A change had gradually taken place, partly attributable to the influence of his

sad bereavement, and partly to the fact that, like “Earth’s happiest man,” he had drained the cup which she offers, and, as it must ever be, was unsated by the draught. The buoyancy and mirthfulness of earlier days, were succeeded by an unwonted serionsness and reticence. He bore himself more passively than before; indulged less frequently in his genial pleasantries; and, as if it were an effort rather than a pleasure, ceased to take, as he had been accustomed to do, his full share in conversation. By strangers, or casual acquaintances, it might, perhaps, be thought that there was always something of indifference or coldness in his deportment; but this was more in appearance than in reality. It was necessary that he should be known to be fully appreciated. Though uniformly courteous and polite, it is no derogation to say—for it is the prerogative of few—that he did not possess the fascination and winning affability, the magnetism of manner, which, on first impression, attract regard and insure popularity; resembling in this respect John Quiney Adams, or Sir Robert Peel, rather than Henry Clay, or Mr. Kendall. The description which Shakspeare gives of the great Cardinal, might, with some little qualification, be applied also to him:—

“Lofty and sour to those who loved him not,  
But to those men who sought him, sweet as summer.”

But these blemishes, if such they were, though they may have lessened the grace, scarcely impaired the fair proportions, of a character in which there was so much to respect, admire, and approve.

In stature, Dr. Paul was rather above the ordinary height; and in figure, well formed and robust. His features were regular and clearly defined; his countenance prepossessing; his step short and quick; and his carriage erect and manly.

He was simple and moderate in his habits; straightforward and honest; and free from all ostentation, pretence, sham, and unreality. Like Cowper, he hated from his very soul all affectation. There was no concealment or hypocrisy in his nature; his disapprobation was unmistakably expressed, and his approval as heartily bestowed. He was an useful citizen, and a humane, honorable and upright man. No one ever connected his name with aught that was little, equivocal, or unworthy. He was scrupulously observant of punctuality in all his engagements, rightly thinking that time is money, and that no man is excusable for selfishly encroaching on what belongs to another. We could scarcely conceive of the commission by him of so flagrant a breach of the law of consideration, as is related by Dr. Charles Caldwell of the admirable and justly celebrated Dr. Wistar. Having on one occasion an appointment with the Doctor, in the northern part of the city, Dr. Caldwell—then temporarily residing in Burlington—rose, breakfasted before daylight, and rode on horseback twenty miles through cold and mud, in order to be on the spot at the designated time; and—waited half an hour for his colleague, who had to ride only a few furlongs! Want of punctuality was certainly a defect in a character which abounded in so many virtues; but there are few in whom so much could be found to palliate, if not to excuse, even that delinquency. He was at the time overwhelmed with engagements; and had too confidently undertaken to compose his great work simultaneously with its delivery in lecture. The tyranny of the press, and the distractions of business, public and private, rendered such a task impracticable, and it was soon abandoned.

Dr. Paul sometimes, though rarely, took part in the debates of the College; but when he did so, his opinions, char-

acterized by his wonted clearness, shrewdness, and practical common sense, were always heard with respectful attention, and seldom failed to elucidate the subject under discussion. No medical papers from his pen are known to exist; and it is believed that he contributed little or nothing to the literature of his profession;—a matter of well-founded regret, for, though he had long withdrawn from practice, his opportunities for observation had been considerable, he was still conversant with medical men, and from the resources of a thoughtful and active mind he might have drawn much to enlighten and instruct. He served the College not only in the office of treasurer, the duties of which he performed with the strictest accuracy, fidelity, and forbearance, but also in the several committees of which he was either *ex-officio*, or otherwise, a member; always ready to fill any post, or do any service that was devolved upon him. He evinced a deep interest in the College to the very close of his life. Although he seemed for the last few weeks to have banished from his mind all concern for his personal interests, he constantly thought and spoke of its affairs; and even made reference to them on the day before his departure—

“When death, just hovering, claimed his prey!”

To facilitate the business of his department, he was accustomed, with book, and papers ready for signature, to attend the meetings of the College, “sitting at the receipt of custom” immediately below the chair of the President; and few were the occasions, stated or special, on which, during his long tenure of office, he was absent from his position.

The political opinions of Dr. Paul were strongly republican. He was no apologist for slavery, but would nevertheless have preserved inviolate its constitutional guarantees, as long as they were observed by its advocates. The separation of the

States he clearly foresaw would necessarily increase in a ten-fold degree all the evils of which they complained ; and the preservation of the Union was therefore paramount to every other consideration. His reason and his sympathies thus concurring, he warmly espoused the cause of the National Government, and throughout the struggle exerted himself heartily in its behalf.

He was brought up in the bosom of the Presbyterian denomination ; regulated his life by the precepts of Christianity ; and long enjoyed the teaching and pastoral direction of his learned friend, the late Rev. Albert Barnes. Happy would he have been could he have had in his declining years, and in his final hours, the cheering ministrations of that eminent and exemplary divine !

Dr. Paul inherited from nature an excellent constitution, which he had injured by no excess, and rejoiced in the possession of general good health, chequered only by occasional attacks of gout, until he had attained the advanced period of three-score years and ten. Surrounded by all that could minister to ease and comfort, and with the pleasures of the world always within his reach, he not unwise thought that they were intended by the GIVER for restrained and moderate enjoyment ; but his indulgence never overpassed the boundaries of discretion and sobriety. His coolness amid scenes of excitement has already been noticed ; and the self-discipline and control which it implied, governed all his conduct. It is much to say that, preserving the happy mean between license and undue strictness, he led a blameless and virtuous life, marked by a dignity of demeanor and consistency of behavior not always seen in persons of higher profession and more rigid practice.

His death was neither sudden nor unexpected. Apart

from the flight of time, he had received intimations by ailments incident to age that his physical health was waning, and that it behooved him to set his house in order. His once vigorous frame lost its fulness and solidity; his strength became gradually impaired, until it was “but labor and sorrow;” and his range of exercise, though he bravely strove against increasing weakness and infirmity, grew more and more circumscribed, until at last he was confined to his bed. There was no particular local disease. The functions of digestion and assimilation were suspended, or very inadequately performed. Emaciation was, of course, extreme, and, in the sure gradation of decay, attaining a point incompatible with longer existence, he peacefully and trustfully expired on the 13th of October, 1877, in the full possession of his mental faculties, and in the seventy-sixth year of his age.

Dr. Paul went in and out among his fellow-citizens of a community in which he had always dwelt, during a period considerably beyond that ordinarily allotted to man, with an unsullied character; and enjoyed in a high degree the respect, confidence, and esteem of all good men. This appreciation and sympathy were shown by the general expression of sorrow for his death, and by the concourse at his funeral of persons venerable for their age and distinguished by their talents and position.

Obituary notices, speaking in regretful and laudatory terms, appeared editorially in all the principal papers of the city; and the various institutions of which he was a member hastened to place on record appropriate memorials expressive of their grief and loss. Several of these, together with the proceedings of the College, have been appended to this memoir, as containing further illustrative information, and as furnishing independent testimony to the truth of the outline therein briefly and imperfectly drawn. Many will probably

be surprised at the numerous and weighty engagements of one who went quietly about doing his duty, seeking no applause from man, but content with the approbation of his own conscience, and careless apparently of any other reward.

How different the spectacle presented in their latter days by two individuals who grew old together, and whom many of us have personally known and loved—of equal intelligence, culture, social rank, and estimation—neighbors, friends, and companions from childhood. The one loosening his hold on life, emancipating himself from its cares, and slowly descending into the place appointed for all the living; while the other, a few years only his junior, renewing his youthful vigor, and mounting, almost literally, on eagles' wings, is borne abroad, with universal and hearty acclaim, the honored representative of his country at the court of one of the most powerful and intelligent nations upon earth!

*Per varios casus, per tot discrimina rerum  
Tendimus in Latium; ubi sedes fata quietas  
Ostendunt.*

Mr. Chairman, I have finished a task which, as you know, I accepted with an unwillingness arising solely from the conviction that there were among the Fellows many by whom it would be much better performed. Of the correctness of the portrait, they are amply qualified by long acquaintance to judge, and will bear ready witness that I have not written in a strain of undeserved and indiscriminate eulogy. It has afforded me a grateful opportunity of laying my humble tribute on the grave of a friend of more than fifty years, from whom I have received many acts of kindness, and to whom I am indebted, among others, for my nomination to Fellowship —almost coeval with his own—in this College.

REQUIESCAT IN PACE!

## PROCEEDINGS OF THE COLLEGE OF PHYSICIANS.

At a special meeting of the College of Physicians, held October 15, 1877, on the occasion of the decease of Dr. J. Rodman Paul, the following minute and resolutions proposed by a committee, of which Dr. Edward Hartshorne was chairman, were unanimously adopted:—

The long-continued and important relations with the College, of our late Fellow, John Rodman Paul, M.D., render it proper to place upon the minutes a formal recognition of the high character of those relations, and of the loss sustained in their termination by his death on the thirteenth day of October, 1877.

Dr. Paul was elected a Fellow of the College in February, 1836, and Treasurer of the College in July, 1838. He was one of the Trustees of the Building Fund of the College from its inception in 1850, until the final merging of that fund in the property of the College, and the discharge of the trustees in March, 1863. He was also a member of the Building Committee of the College until the discharge of that committee in February, 1864, after the completion of the College Hall. And, since the organization under the Mütter agreement, and on the completion of the Hall, of the Committee on the Mütter Museum, to receive and disburse the income of the Mütter Endowment Fund, he has been the chairman of that committee.

He was distinguished, therefore, not only as the holder of one of the most responsible and onerous offices of the College during nearly forty years, but as the most important participant in the three other important pecuniary trusts of the College during nearly eighteen of those forty years.

Although for many years withdrawn from professional practice, and rarely taking part in scientific discussions, he was scarcely ever absent from his post at the meetings of the College and of the committees; and he continued to manifest a strong interest in the affairs and objects of the College, and to attend to his official duty, as far as his failing strength permitted, until the last few hours of his life.

His constant and active interest in the concerns of the College, his ever watchful and wise scrutiny of its expenditures, his promptness and precision in the management of its accounts, and his courtesy in the discharge of his official duties, his clearly expressed and just sense of honor and propriety as well as of sound policy, his readiness to uphold and advance the true interests and dignity of the College and to oppose all inconsiderate or compromising action, have long been familiar characteristics of his connection with the College. They have exercised an influence on the deliberations and habitual character of the College which cannot be too highly valued, and must long continue.

In view of the record thus presented, it is *Resolved*—

1st. That the decease of their late treasurer, John Rodman Paul, M.D., is deeply felt by his fellows of the College, as the loss of one of their most esteemed and honored officers and members, whose faithful and efficient services and wholesome influence will long be held in grateful and affectionate remembrance.

2d. That his example as an Officer and a Fellow will be cherished by the College as among the most useful of the services rendered during his forty years devotion to the general interests of the College, and to the onerous and often thankless duties of his important trusts.

3d. That a copy of this minute and these resolutions be respectfully conveyed to the family of the deceased, as expressing the sentiments of the College, and its sympathy with them in the common bereavement.

#### PROCEEDINGS OF THE PHILADELPHIA CONTRIBUTIONSHIP.

Extract from the minutes of a stated meeting of the board of directors of "The Philadelphia Contributionship for the Insurance of Houses by Fire," held October 17, 1877. The chairman, Dr. Charles Willing, presented and read the following

#### MINUTE.

*Resolved*, That the board of directors have heard with deep sorrow of the death of their late fellow-member, Dr. John Rodman Paul, which took place on the 13th of this month.

Dr. Paul was chosen a director of this Company March 1, 1848. During this long period he was a most useful and efficient member, always giving faithful attention to the work of the committees, while to the management of affairs in the general Board he brought a clear and independent judgment, ever expressed both with courtesy and with self-reliance, which was most valuable in determining the direction of business.

He possessed much literary culture, and having selected the profession of medicine, in his qualification for its pursuit availed himself not only of the resources of the best Schools in his native country, but also of some of those most distinguished in Europe; and entered upon the practice of his profession as one of the most thoroughly educated men of his day, giving abundant evidence that, had he continued in its active exercise, from which he withdrew at a comparatively early period, he would have become one of its most distinguished members.

The high consideration in which he was held by the general community was evidenced by the many important public trusts which he was chosen to fill; the duties of all of which he discharged with the most complete ability and thorough integrity.

With a character possessing all the elements of strength, fitting him for the successful conduct of affairs, he was of a most kind and genial temper, eminently social, and extremely attaching all who knew him well.

The Board wish, on this occasion, to express the great respect and warm regard felt for him by every member of their body, and desire also respectfully to offer to those whom this deep bereavement most nearly touches, the expression of their heartfelt sympathy. .

On motion of John Welsh, Esq., the minute was approved, and the Secretary was directed to enter it at length on the minutes, and send a copy to the family.

JAS. SOMERS SMITH, *Secretary.*

PROCEEDINGS OF THE BOARD OF PRISON INSPECTORS.

PHILADELPHIA COUNTY PRISON,  
October 17, 1877.

At a special meeting of the Board of Inspectors of the Philadelphia County Prison held this day, the President of the Board, John B. Biddle M.D., announced the death of John Rodman Paul, M.D., when, on motion of the Hon. J. R. Chandler, the following preamble and resolutions were unanimously adopted:—

The death of John Rodman Paul, M.D., is an event which produces great emotions of regret in all who had general intercourse with one so eminently capable of inspiring respect, and especially is such interruption of social and official intercourse to be lamented by "The Board of Inspectors of the Philadelphia County Prison," of which Board Dr. Paul had been for more than twenty-one years a useful member; in the discharge of the duties of which place he had insured great respect by his sound judgment, his steady advocacy of the right, and his temperate zeal for the proper administration of the affairs of the institution; while he secured and maintained the affectionate regard of his colleagues by the unvarying courtesy of his manner and the kindness of his disposition.

The Board of Managers, mindful of the many virtues of its departed member, and feeling it a duty to make record of the esteem in which he was held by his co-laborers, and of the deep regret which the loss of his companionship has produced, has

*Resolved*, That in the death of Dr. John Rodman Paul, the public generally has occasion to mourn the loss of a valued, public-spirited citizen, who gave the use of varied talents to many of the institutions of this city, and, with a full devotion of his gifts and acquirements, acquitted himself of his assumed obligations so amply and so successfully, as to insure the profound and grateful recollection of his fellow-citizens.

*Resolved,* That the members of the Board bear in constant recollection the pleasure of their official intercourse with a gentleman whose amenity of manner and whose large acquirements from study and travel gave a charm to his companionship, and whose sound judgment in the discharge of his public duties, and well-regulated views of the responsibilities of the places he held at the Board, insured affectionate and lasting respect; and the surviving members of the Board feel that they discharge a duty to themselves, as well as to the memory of their departed colleague, when they unite to express their high appreciation of the worth of Dr. J. Rodman Paul, whose life insured for him the regret, and warranted the commendations, that follow the death of a good man.

*Resolved,* That these proceedings be spread at large upon the minutes of the meeting, and that an attested copy thereof be transmitted to the family of the deceased, as an expression of the profound respect in which the members of the Board hold the memory of their departed colleague, and as a token of the sympathy of the Board in the sorrow which such a bereavement has brought to the mourning relatives.

Witness my hand and the seal of said Prison the day and year above written.

JOSEPH K. HOWELL, *Clerk.*

#### PROCEEDINGS OF THE PHILADELPHIA SAVING FUND.

##### PHILADELPHIA SAVING FUND SOCIETY.

At the stated meeting of the managers, on the 7th instant, the President having announced to the Board the death of Dr. J. Rodman Paul, a manager of the Society, the following minute was submitted by Dr. W. V. Keating, and unanimously adopted:—

Dr. J. Rodman Paul was elected a member of our board in December, 1872, and, though only five years among us, was always assiduous in his attendance on our meetings, and most zealous in promoting the interest of our Institution.

A distinguished graduate of the University of Pennsylvania, he finished his medical education in Paris, where he acquired a thorough knowledge of the French language and literature. After devoting himself many years to the practice of medicine in his native city, beloved and respected by a large circle of devoted patients, he retired from the active duties of his profession at an early period. In comparative affluence, surrounded by admiring and faithful friends selected from the most esteemed portion of our community, he did not abandon himself to a life of ease and indolence, but devoted the resources of a highly cultivated mind, and uncompromising rectitude of character, to the benefit of his fellow-citizens. As Treasurer of

the College of Physicians in this city, Inspector of Public Prisons, Trustee of the University of Pennsylvania, and Director of the Bank of Commerce, he evinced sterling traits of character, and gave evidence of a rare combination of a high degree of mental culture and unflinching integrity. Unassuming and genial in manner, ready in conversation, and with a wit

" Which in the combat as gentle as bright  
Ne'er carried a heart stain away on its blade,"

he was the favored guest of every circle.

He passed gently away, surrounded by those loving hearts of his family hearth of which he had ever been the life and the light, and mourned by a grateful community as a model of an upright man and a true Christian.

Placide quiescat!

*Resolved*, that we sincerely condole with his bereaved family at the irreparable loss which they have sustained, and that whilst, as his fellow-members, we deeply deplore the absence from among us of one who has so endeared himself to us, we also recognize in his useful and unspotted career a forcible example of the influence which a modest, high-toned, and courteous gentleman can exert upon a whole community.

Extract from the Minutes,

Nov. 9. 1877.

WILLIAM PURVES, *Secretary*.

PROCEEDINGS OF THE UNIVERSITY OF PENNSYLVANIA.

PHILADELPHIA, Nov. 7, 1877.

J. RODMAN PAUL, ESQ.,

Dear Sir: At a meeting of the Board of Trustees of the University of Pennsylvania, held Nov. 6, 1877, before proceeding to business, Mr. Fraley feelingly announced to the Board the death of their late fellow-member, Dr. J. Rodman Paul, which had taken place since the last meeting, when it was

*Resolved*, That this Board has heard with deep regret of the death of Dr. J. Rodman Paul, for many years past their honored colleague in the Board of Trustees of this Institution,

*Resolved*, That in the death of Dr. Paul the University has lost one who, by his long service, eminent ability, and wise counsel, added much to the welfare and reputation of the Institution.

*Resolved*, That a copy of these resolutions be sent to the family of Dr. Paul and be entered on the Minutes.

With the highest respect,

CADWALADER BIDDLE, *Secretary*.

## PROCEEDINGS OF THE GLOUCESTER LAND COMPANY.

PHILADELPHIA, Oct. 15, 1877.

At a special meeting of the Board of Directors of the "Gloucester Land Company," held this day, the following resolution was unanimously adopted:—

*Resolved*, That the Board has learned with feelings of deep regret of the death of its late President, John Rodman Paul, M.D., who has presided over its deliberations for more than a quarter of a century with so much dignity, wisdom, and impartiality; and that we all realize that in the death of Dr. Paul this Company has lost its chief guide to its present prosperity, we an old and pleasant friend and associate, and his family (with whom we deeply sympathize) an indulgent and affectionate father, who was in every sense a truly Christian gentleman.

JAS. B. MFARLAND,  
*Secretary of the Meeting.*



## M E M O I R

OF

J O S E P H C A R S O N , M . D. ,

LATE ONE OF THE CENSORS OF THE COLLEGE, EMERITUS PROFESSOR OF  
MATERIA MEDICA AND PHARMACY IN THE UNIVERSITY  
OF PENNSYLVANIA, ETC.

By

JAMES DARRACH, M.D.

[Read May 7, 1879.]

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The College of Physicians has assigned me the duty of preparing a memoir of our late and distinguished Fellow, Dr. JOSEPH CARSON; and while I am grateful for this opportunity to pay a tribute to his memory, I undertake the task with much fear of my ability to perform it aright, and I cannot but feel that abler hands than mine should have been selected for this sacred duty. We all must lament the death of Dr. Carson, and it is a melancholy thought that all that is left of his mortality lies hidden in the grave; yet, while his body mingles with the dust, his good deeds live with us as a part of his immortality, a lamp to illumine our paths. In tracing his lineaments, I would avoid becoming either the critic or the eulogist, and it will be my endeavor to draw his portraiture as truthfully as the bias of warm friendship will admit. To say that our friend was without faults, would be to say that he was more than human; but whatever they may have been, we are safe in leaving them to be weighed and judged by the Higher Power, while we try to do justice

to his merits, with the assurance that if we follow in his footsteps, and are guided by his principles, we shall have fairly earned the praise of "Well done, good and faithful servants," remembering that a well spent life like his results not only in satisfaction and benefit to ourselves, but in good to others while that life lasts, and, when our work is done and the Master sees fit to call us home, serves as an ensample to those whom we leave behind.

Dr. Joseph Carson was born in Philadelphia, on Easter Monday, the 19th of April, 1808, and died December 30, 1876, in his sixty-ninth year. His paternal ancestors were originally from Scotland, and belonged to that rigid and staunch Presbyterian denomination which has made its deep impress upon the politics and institutions of our country. They left Scotland during the tyrannical reign of the Stuarts, and passed over to the north of Ireland. In 1735, three brothers, Andrew, William, and Joseph, emigrated to this country. Joseph (the grandfather of the subject of our notice) settled in Philadelphia, and was one of its old shipping merchants, who, like Robert Morris, loaned his credit to the Continental Congress during the struggle for independence of his adopted country. His son (also named Joseph), a highly respected merchant, though unsuccessful in business, was united in marriage to Elizabeth Laurence, daughter of Isaac Laurence, of Long Island. The issue of this union was five children, of whom Joseph, the future Professor Carson, was the eldest.

Of the doctor's early days, I have been able to learn but little, excepting that his family speak of him as having always been a student. A story connected with his childhood, and which was told me by his sister, I will relate, as it displays one of the strong points of his character. A gentleman was giving an account of a woman who had called

upon a female friend to borrow a tub, and, not gaining admission after repeated knocking, had ventured to look in by the window, when with horror she saw her friend lying dead upon the floor, with evidences of having been murdered. The story finished, young Carson, who was present, and then eight years of age, seemed unaffected by this tale of horror, and, apparently much more interested as to whether the woman accomplished the object of her journey, asked the narrator, "Did she get the tub?"—which phrase stands as a by-word in the Carson family until the present day. This story may appear to have no particular point, or in some minds may reflect unfavorably upon the little questioner, as manifesting a want of feeling, and an unimpressible nature. I see it, however, in another light, as an illustration of a decided trait of his specific character. The question indicates that, had he been sent for the tub, not even the sight of the murdered woman would have deterred him from accomplishing the object of his errand; and this quality, this grip of mind, as it were, which holds on to the end, is of supreme importance in the battle of life, and belongs only to those who know no such word as fail; while, for the want of it, genius, talent, and brightness, often accomplish but little.

The rudiments of young Carson's education were obtained at the Germantown Academy, then under the patronage of Mr. John Brewer, a very highly respected teacher in his day. The building still stands in School Lane, bearing the coat-of-arms of George IV, a relic of the olden time. As he grew older he was placed under the tuition of Mr. White, of Philadelphia. Of this part of Dr. Carson's life, I have little to relate. It is highly probable that he passed through the ordinary schoolboy's experiences, though I doubt that he entered much into the sports of his companions, nor do I

suppose he ever distinguished himself in any of the usual boyish games requiring physical effort ; he was not renowned, like McClellan, the surgeon, for being a good shot ; nor did he, like Bache, swim the Delaware ; in fact, from my knowledge of him, I should suppose that he had always been physically inactive, and, even in his later years, he showed no disposition to exaggerate the importance of early rising. He was not a sprightly boy, yet showed great zest in pursuits which were consonant with his tastes, and we might here quote the words of Macaulay, as applied to another distinguished Joseph, that “we have abundant proof that whatever Joseph’s pranks may have been, he pursued his studies vigorously and successfully.”

From Mr. White’s school, Mr. Carson entered (at the age of fifteen years) the Sophomore Class of the University of Pennsylvania, at this time under the presidency of the Rev. Frederick Beasley, D.D. The early part of his collegiate life was somewhat ruffled, from his not being as well prepared as he should have been, and his having to relearn his Latin pronunciation, that which had been taught him at school differing from that accepted at college. This annoyed him greatly. Nor did he, at best, much relish his academic career, and probably would not have pursued his studies here had it not been for the persistent efforts of a devoted aunt, who helped and encouraged the young student. Having resolved on this course, he showed, as he did throughout his life, a determination to do his part faithfully, and to strive for excellence ; so that, with close application to his books for three years, he graduated with honor, and received his diploma as Bachelor of Arts, on July 27, 1826.

He had now, at the age of eighteen years, completed his collegiate course, which brings him to a most import-

ant epoch of a man's existence, that at which it becomes necessary to decide upon the path which is to be travelled with credit to himself and usefulness to his fellowmen, or to result, after a life's struggle, in failure and disaster. Feeling the necessity of doing something for a livelihood, he selected a business life, and was induced to enter the wholesale drug store of Dr. Edward Lowber. He did not, however, remain here long, the daily routine of trade being uncongenial to his tastes and constitution of mind. No doubt, also, his aspirations by this time took a higher flight, which, combined with the irksomeness of an apprentice's life, influenced him to change his course. We should remember that, in that day, a store apprentice performed duties of a more servile nature than the boy of the present age, upon entering his business career; it became his duty, then, to sweep out the store, make fires, and, as in young Carson's case, wash out the bottles. An impulse was given, while employed by Dr. Lowber, to the study of botany, the doctor being a botanist.

This study soon filled Mr. Carson's mind, and it was not long before he became an enthusiastic lover of plants, and made frequent excursions for their collection; he was also led from the study of abstract botany to investigate the medicinal virtues of his floral acquisitions, and while collecting for his herbarium, he made decoctions and infusions of the plants, testing their effects upon his own person; and his sister (who often accompanied him on these expeditions) says, he tried to induce her to partake of these bitter drinks, that he might extend his observations. These trips into the country, while they served no doubt to relieve the monotony and wearisomeness of his business life, invigorating his system and increasing his love of nature, also opened his mind

to its future, and directed him into the path which he followed from this time on, so faithfully and successfully, drawing nearer and nearer to the temple of fame until he entered its portals, and finally leaves us with his name engraved upon her tablets, among those of the wise and good whom he has now joined. From flowery lanes and woodland paths, he was directed to the extensive field which now opened before him, the broad field of medicine. Having thus made up his mind, he entered as a private pupil the office of Dr. Thomas T. Hewson, one of the distinguished physicians of his day, and from his preceptor's office he matriculated at the Medical Department of the University of Pennsylvania, and received his degree of Doctor of Medicine in the month of March, 1830, having presented for graduation a thesis on animal temperature, an essay (though not marked by originality) exhibiting research, method, clearness of thought, unambiguous style, and sound reasoning; all of which qualities continued to characterize his writings and teaching in after life.

Soon after graduating, Dr. Carson was elected one of the resident physicians in the Philadelphia Alms House, then situated on Tenth Street, between Spruce and Pine. His companions, while here, were all men of first-class ability, some of whom, like himself, distinguished themselves in their after life. They were William W. Gerhard, George W. Norris, Thomas Forrest Betton, Thomas Stewardson, Edward F. Rivinus and William Keith.

As popularly understood, Dr. Carson had now completed his medical education, having obtained his theoretical knowledge from the oldest and most distinguished school of medicine in our country, and having gathered a rich practical experience from close clinical observation, which, with

the opportunities that such a school offered for the study of diagnosis and the effects of remedies, prepared him to assume the responsibilities of a physician. He did not, however, immediately enter upon the practice of his profession, but determined to take a voyage to the East Indies. Of his motives for so doing I know not; perhaps to see the world, and that he might better his circumstances, and thus be able to enter upon his future career, free from that embarrassment which has sapped the energies of more than one bright mind, and driven it from the profession, weary of waiting, and of living; ever living, on hope. However this may be, Dr. Carson set sail as surgeon, on board the ship "Georgiana," commanded by Captain John Land; during which voyage he visited Madras and Calcutta, returning to Philadelphia, August 3, 1832, having been absent nearly a year. While on this expedition, he kept a journal, in which we find, neatly and methodically arranged, tables indicating the temperature of the sea and air, and the barometrical conditions of the atmosphere, with excellent drawings, some of them colored, of the flora and fauna, which did not escape his quick senses and inquiring mind. His description (recorded in the journal) of sea-sickness, as experienced by himself, is graphically and clearly given, with its physiological causes and conditions well presented.

After his return from India, we find Dr. Carson, at the age of 24 years, entering upon the duties of the practitioner; and he was not an exception in regard to the customary tardiness with which the public receives the young physician, since for the first nine years his monetary realizations from practice were very small. At the expiration of this time, and at 33 years of age, he was united in marriage with Mary Goddard, sister of Dr. Paul B. Goddard, and granddaughter of Paul

Beck, of this city. From this union there was no living issue; and Mrs. Carson was prematurely carried off within a year of their marriage. After remaining a widower for seven years, Dr. Carson formed a second matrimonial alliance with Mary Hollingsworth, daughter of Henry Hollingsworth, who was for many years the Cashier of the Bank of North America. The four children from this marriage were Henry (who died in infancy), Hampton L., now a promising lawer, Ann C. and Susan, who are left to mourn a loving and devoted father. After the first ten years, Dr. Carson's practice increased very much, and he eventually gained an excellent position as a practitioner of obstetrics. This branch of the profession, however, necessitating much labor, involving night work and its consequent exposure, wore upon his health, which was never robust. He scarcely passed a winter without an attack of tonsillitis or gout, and now, in the midst of his success, he was compelled to curtail his practice, and finally to give up entirely the branch in which he was becoming distinguished; perhaps he was also influenced by a desire to work in another field, and thus gain distinction by following pursuits which were more congenial to his tastes, and which, he had the discernment to see, were better adapted to his mental constitution and powers; and the results of his life give evidence of the wisdom of his choiee.

From this time he begins to fill various positions of honor, responsibility, and trust; in all of which he does himself credit, and gains respect and confidence as a clear thinker, a judicious adviser, and a constant, faithful, and laborious worker. While not neglecting to fulfill the duties with exactness and honesty of all the various posts whose responsibilities he assumed, he still found time to cultivate history, literature, and biography; penetrated somewhat into anti-

quarian pursuits, and succeeded in making a fine collection of valuable autographic letters. He also left a number of volumes filled with the engraved portraits of distinguished men in and out of the profession. From these pursuits he had gathered a rich store of information, and, having been gifted with an accurate and retentive memory, he never failed to be an interesting and instructive companion. This habit of enlarging and widening his field of intellectual culture, he took pains to inculcate upon his pupils, as increasing their usefulness and influence.

The first institution to which Dr. Carson became attached, was the Academy of Natural Sciences, to which he was elected on October 29, 1835, and was one of its most active and useful members. He assisted in arranging and caring for the Herbarium, was Librarian for two years, and aided in preparing and publishing a catalogue of books; was a member of the publication committee for two years, and served as Secretary during six months in 1837. He ultimately became one of the Vice-Presidents, which position he occupied from December, 1869, to December, 1875, and he made contributions over a period of forty-three years. At a period anterior to this, Dr. Carson had reached another round in the ladder which he was gradually but surely ascending. I refer to his election as Professor of Materia Medica in the Philadelphia College of Pharmacy, which election took place in 1836; he held this post until the year 1850. While occupying this position, he was assiduous in other good works, still working zealously for the Academy of Natural Sciences, and adding to the duties and labor of his chair, the editing of the *American Journal of Pharmacy*, assisted by Dr. Bridges, and subsequently by Professor William Proctor; a journal which has always sustained a high reputation. He contri-

buted to it no less than twenty-six original papers; and on looking over these, I find that he was the first botanist to describe fully and give prominence to the genus *Alstroemeria* as a source of edible fecula. He also, together with Pereira, fixed the genus *Myrospermum Peruiferum* as the source of the Balsam of Peru. While connected with the College of Pharmacy, Dr. Carson edited, with notes and additions, two editions of Pereira's *Materia Medica*, and in 1847, published his beautiful and creditable Illustrations of Medical Botany, in two quarto volumes, having, it is said, drawn and colored many of the plates himself.

In the spring of 1844, Drs. Carson, Paul B. Goddard, Wm. Poynell Johnson, Caspar Morris, M. P. Hutchinson, James B. Rogers and Wm. W. Gerhard, became the incumbents of the lectureships in the Medical Institute of Philadelphia, which had "originated under the auspices of Dr. Chapman, Professor of Theory and Practice of Medicine in the University of Pennsylvania." This institution, which was a summer school of medicine, grew out of a private association formed by Dr. Chapman for the benefit of his pupils. "In 1829, a Hall was erected to accommodate the increased size of the classes. It was situated in Locust Street, above Eleventh." Dr. Carson's chair was that of *Materia Medica* and *Pharmacy*. He was then, as will be perceived, carrying on a course of lectures in the College of Pharmacy during the winter, and in the summer at the Medical Institute. How long he retained his connection with the Medical Institute I am unable say.

He was elected a physician of the Lying-in Department of the Pennsylvania Hospital to fill the place of Dr. Charles D. Meigs, resigned, and occupied this position, associated with

Dr. Hugh L. Hodge, from 1849 until May, 1854, when this part of the hospital was closed.

Dr. Carson was elected a member of the American Philosophical Society, and was its Curator for seventeen years; he also served on the publication committee and on the library committee. He was highly esteemed as a member of the Board of Directors of the Philadelphia Trust and Safe Deposit Company, to which position he was elected in February, 1872. There were various other associations with which he was connected. He was a member of the National Convention for revising the Pharmacopœia of the United States, and served on the Committee of Revision and Publication in 1860, and was Chairman of the Committee and President of the Convention in 1870. He was a member of the Philadelphia County Medical Society, and its President in 1862, and was one of its delegates to the Quarantine Convention, held in Cincinnati in May, 1861. He was elected honorary member of the College of Physicians and Surgeons of Reading, Pennsylvania, in 1870 ; of the State Medical Society of New York, and of the Philadelphia College of Pharmacy. He was physician of the Foster Home in 1840, and was elected a consulting physician of the Hospital of the Protestant Episcopal Church in May, 1852. He was elected a Fellow of the College of Physicians in December, 1838, and was one of its Censors for several years, and continued to occupy this position up to the time of his death. The College elected him as one of its delegates to the National Medical Convention held at Philadelphia May, 1847, which became subsequently the American Medical Association. He was appointed a member of the Committee on Indigenous Botany ; was frequently appointed a delegate to the annual meetings of the American Medical Association, and was elected one of

the College's representatives to the International Medical Congress of 1876. The testimonials which his family received from the various associations of which he was an active member, are a sufficient guarantee of the esteem in which he was held by all of them.

We have next to consider Dr. Carson from the time he became a Professor in the University of Pennsylvania. When Dr. George B. Wood was transferred from the chair of *Materia Medica* (which he had occupied with so much distinction) to that of the Theory and Practice of Medicine, made vacant by the resignation of Dr. Nathaniel Chapman, Dr. Carson applied for the position, now without an occupant because of this transfer. His well-earned reputation, and his already established position as a learned and successful teacher and writer, made the selection an easy one, though his competitors were men of distinction. He was therefore duly elected, and assumed the responsibilities of Professor of *Materia Medica* and *Therapeutics* in the oldest medical school in America, in the year 1850, and held his chair until May, 1876, a period of twenty-six years, when he resigned on account of ill health, and was then made one of the Emeritus Professors of this institution.

I do not recall having attended any of Dr. Carson's lectures, and therefore must depend, for my description, upon information obtained from his former pupils, and from my knowledge of him as a man. He was not considered an eloquent or brilliant lecturer, and made no display of oratory, which would have been inconsistent with the subject he had to teach. His language was correct, and his style clear. His manner of speaking was slow, though his words flowed with fluency, and were always well selected. Being an entire master of the branch of medicine which he taught, he

made an excellent and successful teacher ; and while he held up before his class the importance of the *Materia Medica*, and would not admit that this branch stood secondary to the other branches of medicine, but gave to, as it received from, them aid and support, he was not an enthusiast, but tried to inculcate moderate views as to the efficacy of medicines, and taught the pupil to view drugs not as specifics, but as aids to nature in her effort to throw off disease. He also took seasonable opportunities to impress them with the dignity of their profession, and the necessity of entertaining enlarged views of their calling. The perfect physician does not consist simply in the accurate diagnostician and the skilful therapeutist ; he must be mentally cultivated, liberal in his views, with a knowledge of mankind—of their mental as well as their corporeal parts. He should be gentle, kind, and humane ; should exercise candor towards his patients, and, above all, never stoop to play upon the credulity of poor suffering humanity, or to make it subservient to gain ; avoiding all presumption or pretension, he should study nature, and apply his resources to aid and sustain her in her spontaneous efforts. He should also cultivate elevation of sentiment, and correctness of opinion ; and especially careful should he be not to favor anything that is subversive of the virtue, honor, happiness, or prosperity of his fellow-citizens, or of his country.

Dr. Carson was always a great favorite with his class. His genial and sympathetic manner, and the parental regard he manifested towards them, created a strong affection between preceptor and pupils. He was ever ready to listen to their troubles, and help them out of their difficulties ; and these intimate and kindly relations did not cease with graduation, but were continued by correspondence, which, increasing

year by year, entailed upon the kind Professor a labor which few knew of or appreciated. This he continued until within a year of his death, when failing health and strength would admit of it no longer. If this portraiture be correct, we have then exhibited a man pre-eminently fitted for the responsible position which he occupied as a teacher of young men, all of whom were to become centres of influence in the various communities wherein they might settle. The death of such a man is a loss not only to us and to the institution where he taught, but to his country.

We have now followed Dr. Carson's career (how imperfectly no one feels more than myself) from early childhood until he reached the highest position that the medical profession can offer. It remains to speak of him as an author. He was not a voluminous writer, yet what his pen undertook was accomplished and complete. His powers of research and sound discriminating judgment, made all his essays studies of their kind ; while the great care which he gave to whatever he committed to writing, prevented him becoming a prolific author. One work, however, will ever be a monument of his ability as an historian ; I refer to his admirable History of the Medical Department of the University of Pennsylvania, a work which cost him much labor, and displays great learning, and which also we should look upon as a testimonial of the regard, love, and loyalty which he bore to his Alma Mater, and the theatre of his usefulness and fame. Perhaps it was this work which prevented his finding time to write a book on *Materia Medica*, which I know was his intention. His admirable synopsis, however, may be considered as a text-book on this branch ; to this he devoted much time and thought, and was constantly and carefully revising it. I would occupy too much time were

I to try to do justice to the various and valuable papers which he wrote, and will only refer to his learned and exhaustive communications on eclampsia and osmosis, which are excellent illustrations of the masterly manner in which he treated all subjects which he undertook to teach.

And now, in conclusion, I add with permission the following admirable sketch of Dr. Carson's character, written by one who knew him long, intimately, and well: "Blessed with an accurate and retentive memory, he had accumulated by extensive reading and intercourse with intelligent men at home and in different parts of our country, large stores of precise and miscellaneous information, from which he drew freely on appropriate occasions. He was fluent in conversation, and ready in debate, unsensual and unselfish in constitution, placidly cheerful in disposition, and always self-possessed and respectful in his deportment to all. He quickly made friends, and was rarely deserted by any whom he had once attached to himself. He was considerate towards his inferiors, charitable to the indigent, generous to the unfortunate, and ever ready to contribute from his stores of knowledge to assist others in their pursuits. Indeed, warm attachment to his friends, and active devotion to their interests, were characteristic of his nature. Reared under the influence of the Protestant Episcopal Church, of which he was a communicant, his daily conduct in all relations of life was in harmony with Christian precept and practice. Broad and liberal in his views, he was tolerant in spirit; but he despised bigotry, pretension, insincerity, and charlatany, in whatever form, or degree, or color, such weakness appeared; and he did not hesitate to denounce them in emphatic language on opportune occasions. His career is a fair exemplification of how much may be achieved by a man

of industrious ways, coupled with absolute probity and good sense, in the face of restricted means and imperfect health."<sup>1</sup>

And now, gentlemen, I have very imperfectly described the character and virtues of Dr. Carson. As a labor of love and a tribute of regard, receive my work without criticism.

<sup>1</sup> Obituary Notice by Dr. W. S. W. Ruschenberger, *American Journal of the Medical Sciences*, April, 1877.

LIST OF THE PUBLISHED WRITINGS OF THE LATE  
JOSEPH CARSON, M.D.

[Furnished by Dr. Ruschenberger.]

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1837. Notice of a new Species of Lytta—Lytta rufipes. Am. Jour. of Pharmacy, Jan. 1837.  
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Medico-botanical Notices, No. XIII. Am. Jour. of Pharmacy, July, 1837.

1838 Notes on the Taccaceæ. Am. Jour. of Pharmaey, Jan. 1838.  
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Remarks upon Codeia. The Medical Examiner, Dec. 19, 1838.

1839. Introductory Lecture to a course of Lectures on Materia Medica, delivered at the Philadelphia Medical Institute. The Medical Examiner, June 8, 1839.  
Address delivered to the graduates of the Philadelphia College of Pharmaey, April 23, 1839. Am. Jour. of Pharmacy, July, 1839.

1840. Note upon Gentiana Chirayeta. Am. Jour. of Pharmacy, April, 1840.

<sup>1</sup> From Oct. 1836, until July, 1850, Dr. Carson was editor of the Am. Jour. of Pharmacy.

1841. Note upon the Cinehona bieolorata. Am. Jour. of Pharmacy, April, 1841.  
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1844. On an article ealled Texas Sarsaparilla. Am. Jour. Pharmacy, Jan. 1844.

1845. Notice of some Brazilian drugs. Am. Jour. of Pharmaey, July, 1845.  
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*Bib. notice.* Medical Botany. By Robt. E. Griffith, M.D. Am. Jour. Medical Sciences, July, 1847.  
Illustrations of Medicl Botany, consisting of colored figures of the plants affording the important articles of the Materia Medica, and descriptive letter-press. By Joseph Carson, M.D. Quarto. Robt. P. Smith, Philadelphia, 1847.  
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*Bib. notice.* A Dispensatory and Therapeutical Remembrance. Am. Jour. of Medical Sciences, July, 1848.  
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On Quassia Amara. Am. Jour. Pharmacy, Oct. 1848.  
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1850. Calisaya Bark. Am. Jour. Pharmacy, April, 1850.  
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1851. Synopsis of Lectures on Materia Medica and Pharmacy delivered in the University of Pennsylvania. 8vo. Blanchard & Lea, Philada. [November], 1851.

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On the Source of Balsam of Peru. Am. Jour. of Pharmacy, July, 1860.  
*Bib. notice.* Proceedings of the American Pharmaceutical Association, held in Boston, Sept. 1859, with constitution and roll of members. Am. Jour. of the Medical Sciences, July, 1860.

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1862. *Bib. notice.* Annuaire de Thérapentique, de Matière Médicale, de Pharmacie et de Toxicologie pour 1861. Par A.

Bouchardat. Supplément à l'Annuaire de Thérapeutique pour 1861. Am. Jour. Medical Sciences, Jan 1862.

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1. De l'Endosmose des Acides. Par M. Dutrochet, Paris, Oct. 1835.

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1869. A History of the Medical Department of the University of Pennsylvania, from its foundation in 1765. With sketches of lives of deceased professors. By Joseph Carson, M.D. 8vo. pp. 227. Lindsay & Blakiston, Philadelphia, 1869.

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4. Guy's Hospital Reports, 1836, 1841, 1843.
5. Uræmic Convulsions of Pregnancy, Parturition, and Childbed. By Dr. Carl R. Braun, etc. Am. ed. 1858.
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## MEMOIR

OF

JOHN BARCLAY BIDDLE, M.D.,

LATE PROFESSOR OF MATERIA MEDICA AND GENERAL THERAPEUTICS IN THE  
JEFFERSON MEDICAL COLLEGE.

By

E. B. GARDETTE, M.D.

[Read June 4, 1879.]

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MR. PRESIDENT: I accepted with great diffidence your invitation to prepare and read to the College a memoir of the late Professor JOHN B. BIDDLE, M.D. But my mind and heart have united in at least making the effort to do justice to the grateful and complimentary task.

John Barclay Biddle was born in the city of Philadelphia on the 3d of January, 1815. He was the eldest son of Clement Cornell Biddle, and Mary, daughter of John Barclay. His paternal ancestor, William Biddle, had emigrated to America a little before William Penn arrived in his new province of Pennsylvania; and many members of this family have been known and distinguished in the subsequent history of the province, the commonwealth, and the country. It would be a grateful work to elaborate this fact, and follow out the lives of the most prominent among these progenitors down to the surviving representatives that are still worthy of them; but this duty may be out of place as belonging to other occasions and associations. Yet I may at least recall something

of Colonel Clement Cornell Biddle, the father of John B. Biddle, who is still well remembered as a gentleman of high character and position in this city.

During the war of 1812, and when Philadelphia was believed to be in danger, Colonel Biddle raised the military company of "State Fencibles," which, under his command as captain, marched to Camp Du Pont, at Marcus Hook. While there he was promoted to the rank of colonel; and the "State Fencibles," under various captains, continued for many years deservedly popular. Colonel Biddle was one of four gentlemen who devised and founded the "Philadelphia Saving Fund Society," and was for more than twenty-one years President of that still existing and sound institution. He lived to the age of seventy years, and from the records of the Society, after his death, August, 1855, I find resolutions expressive of the high respect and regard of every member of the Board. They say also: "To him the Institution, in a great measure, is indebted for the public confidence it has enjoyed, having been guided and governed in disastrous times by his caution, foresight, and good judgment, shown in the discharge of his duties." Colonel Biddle, in early life, had studied law in the office of Mr. John Sergeant, but his literary tendencies were not confined to that profession; he edited an able work on political economy, from the French of John B. Say, and wrote with force and judgment for some of the best journals and periodicals of the day.

The subject of this notice was, at an early age, sent to the school of Messrs. Wylie and Engles, well known instructors of boys in this city; and afterwards, for a short time, went to the "High School," then presided over by the late Walter R. Johnson. At the early age of fourteen years he was sent for the completion of his education to the Roman Catholic

College of "St. Mary's," at Baltimore. The ensuing four years of his life were spent there with marked advantage, he becoming remarkable for his proficiency in mathematics and the modern languages. Among the direct and happy results was the acquisition of a complete knowledge of the French and Spanish languages, the former of which he continued to speak well and fluently to the end of his life.

After graduating at St. Mary's College, young Biddle began the study of law under the instruction of Mr. Thomas Dunlap, but soon relinquished it for the study of medicine; from whatever cause this change of purpose may have originated, it must be regarded as a most fortunate circumstance for the thousands who have profited by his medical teachings in after life. The first step toward his choice of a new career was to enter the office, as a pupil, of Dr. Nathaniel Chapman, who was nearly related to him by marriage. But there was an unsuspected stronger tie or sympathy between that distinguished medical man and his pupil than that of accidental family connection—and this was the mutual attraction of gifted minds and noble natures.

As a medical student at the University of Pennsylvania, young Biddle was faithful, intelligent, and attentive, and earned his diploma of M.D. at that venerable institution just after attaining his majority. That was the period at which its professorial chairs were filled by the great names of Physick, Chapman, Dorsey, Wood, Jackson, and others, whose unrivalled medical learning and teachings were the chief source for supplying good physicians to the whole of our country.

Almost immediately after graduating Dr. Biddle sailed for Europe, where he spent more than a year in continued efforts of study to improve in his profession. His familiar know-

ledge of the French language was undoubtedly of great advantage while following the lectures and clinics of the eminent men of that time in the medical schools of France.

On his return home the young doctor lost no time in adopting plans for professional occupation and consistent usefulness, and started, in connection with Dr. Meredith Clymer, now of New York, "The Medical Examiner," a fortnightly journal, published in the interests of the medical profession. The first number of this periodical, which continued to sustain a sound scientific reputation for more than eighteen years, was issued on the 3d of January, 1838, the birthday anniversary of Dr. Biddle, who had then completed his twenty-third year; he was even at that time praised for the special feature of furnishing full reports of the clinical lectures delivered in the hospitals of the city by the attending physicians and surgeons. This medical journal was almost an immediate success, and in September of its first year, the accomplished Dr. W. W. Gerhard was added to the editorial staff, with the design of making it a weekly periodical, which was soon its character. Shortly after this, the late justly esteemed Dr. Francis Gurney Smith came into the journal as co-editor with Dr. Biddle.

In examining the early numbers one cannot fail to be struck with the high professional tone, the wide grasp, and the good sense which characterized the editorials, as well as the admirable bibliographical notices with which the pages of the "Medical Examiner" were enriched. The editors, youthful as they were, gave proofs of being trained writers, and brought to their journal professional knowledge and vigor of intellect not often united in men of their age and supposed inexperience.

With regard to Dr. Biddle, the subject of this memoir, I

have heard it stated by those who knew him best, that even in his early boyhood he was remarkable for the ease and beauty of his style of writing. It seemed to flow from his pen, limpid, idiomatic, and finished, without effort; grace and force of diction were combined with that undefinable but well understood quality—good taste; no ornament oppressed, no vein of pleasantry lowered, and no fervor obscured the sense and harmony of the easy march with which it progressed. All was smooth, nervous, and well ordered; rising when the subject demanded a higher movement, but always clear and chastened in every modulation.

I have dwelt for a few moments on these characteristics of style, because they remained with Dr. Biddle until the close of his life; and much of the success to which he attained in the wider theatre upon which he moved during the last fifteen years of his professional career, I believe was due to the charm of his manner, and the dignity of his written and oral discourse.

Early in the year 1846, a number of young physicians, among them Dr. John B. Biddle, believing that there was room in this community for another medical school, obtained from the Legislature of Pennsylvania, a charter of incorporation under the name of "the Franklin Medical College of Philadelphia." The course of instruction began in October, 1846, the faculty consisting of Dr. James B. Rogers, Dr. Vanwick, Dr. David H. Tucker, Dr. Paul B. Goddard, Dr. Clymer, Dr. J. B. Biddle, and Dr. Joseph Leidy, Demonstrator of Anatomy. Dr. John B. Biddle assumed the duties of the same chair in that college which he has so recently left vacant in the Jefferson Medical College by his death. Many if not most of his associates of the Franklin Faculty became afterwards distinguished in their profession, either here or else-

where. That institution had not, however, a long existence, although it served to bring into notice the abilities of the gentlemen connected with it, after the college itself had ceased to be.

At this period of his life Dr. Biddle had acquired a considerable practice, to which he gave active attention. I do not know that he had a large or lucrative list of daily visits, demanding the wear and tear of horses and vehicles, but I do know that he possessed the full confidence and the grateful attachment of many patients of both high and low degree.

Dr. Biddle appeared before the medical world as a professional author in 1852, his first work being a "Review of the *Materia Medica*, for the use of Students; by John B. Biddle, M.D., formerly Professor of *Materia Medica* in Franklin Medical College." This modest book, of about 300 pages, was followed by a second edition, called for in 1865, when it was "revised and enlarged, and adapted to the last edition of the U. S. *Pharmacopœia*." Its title now was "*Materia Medica*, for the use of Students," and this has been permanently adopted for the eight editions of the work which have successively appeared from the same publishers, the demand for each of the new arising from the exhaustion of the previous edition. The last of these was published in 1878, containing 462 pages; and in the steady growth of the work from the first to the eighth edition, we seem to find a pleasant and pointed expression of the increased mental growth, maturity, and reputation, of the medical man of letters. He was now recognized authority on the great subject of *Materia Medica*; the real source and foundation upon which rests the practice of medicine—its inestimable material coming from

the vast and various gifts of nature, and its flora alone demanding the study of a whole life.

A criticism on Dr. Biddle's work, even were I able to give it, would not be in place here; the spirit that dictated "*Oh that mine adversary had written a book!*" has existed, probably, through all time, and in all climes, but I may, in these scientific halls, be thankful that my friend and "Fellow" of this College wrote *that book*, which must long remain a positive help to every medical student that seeks it, and be, in the profession he adorned, a monument to the memory of its author's ability.

During this interval Dr. Biddle had reached professorships in two additional medical schools of good standing and usefulness in this city. The first of these was "the Pennsylvania Medical College," a branch of the "Gettysburg College," where he again filled the chair of Materia Medica. The most active and original promoter, if not the founder of that College, was the late Dr. William Darrach, who filled the chair of Practice at its opening session, and continued in its Faculty until about the year 1852-3. The chief information I have been able to obtain about the Pennsylvania College, concerns its early existence, and is derived from the perusal of a few of the public addresses to the classes by the then gifted Professor of Materia Medica, Dr. Henry S. Patterson. The lectures and other writings of that member of the Faculty, elevate him to a very high rank of learning and eloquence; and it is from one of his beautiful introductoryes (October, 1851) that I discover it to have been in the *ninth session* of the "Pennsylvania College." In 1854 some changes took place in the Medical Faculty, on account of the withdrawal of Professor Wm. Darrach, who was succeeded by the present distinguished Professor of Theory and Practice in

the University of Pennsylvania, Dr. Alfred Stillé, and Dr. Biddle soon after that became Professor of Materia Medica. Some time in 1859 this Faculty was dissolved, and the school went into other hands, to which we have no occasion to refer, as Dr. Biddle had then no connection with it. It has been difficult to obtain even these scanty facts, or records, from which to give anything like a fair or detailed account of the College, of which, however, I have the authority of the member of the Faculty already named, for saying, that "the Pennsylvania College did a good work while it lasted;" and I may assume that Prof. John B. Biddle, in the chair of Materia Medica, contributed his fair share toward the prosperity, the good work, and the good name of the institution.

In November, 1850, Dr. Biddle was married to Caroline, the youngest of six daughters of the late Mr. William Phillips; these, with four sons, constituting the children of that well-known citizen of Philadelphia. It seems almost unavoidable not to cross the threshold and somewhat enter the family circle, if we would speak of the true virtues that have adorned a life; and it will not be inappropriate here, I trust, to say a few words of Mrs. William Phillips, the mother of Mrs. Caroline Biddle. That venerable lady survived her husband by many years, and, although entirely blind before the birth of her last child (Caroline), was a remarkably good housekeeper and a great disciplinarian. She performed all her maternal duties, and ordered every department of her domestic affairs, with admirable judgment and propriety. Her ten children lived to reach mature age—some of them old age—and have ever united in their filial record of a refined and harmonious home, under the personal good guidance of that sightless mother who never saw her youngest daughter. Yet she lived to know of, and be present at, that

child's marriage to Dr. Biddle, and to give it the blessing of her hearty approbation. Nor was her fondness for the doctor misplaced, for his heart was open to a full estimate of such a mother-in-law; he had always shown it by the tender love and devotion toward his own excellent mother, who lived to the venerable age of eighty-nine years, and their constant intercourse and relations were always mutually of the most charming and affectionate kind. I well recall the great, honest sorrow of his heart at the time of the death of his mother, and also at that of her amiable sister, Miss Charlotte Barclay, his aunt, who died six months later, at an advanced age. Very recently the good, present rector<sup>1</sup> of St. Peter's Church, where the family burial-ground is, told me that he had never, in his long experience of funeral services, met with such touching and profound grief at the grave-side, as that which he saw in Dr. Biddle on these two occasions.

Dr. Biddle leaves a widow and six children, two sons and four daughters; his parental love and solicitude for these was in keeping with his filial heart. He lived liberally and cordially amid those in sympathy with him by education and sentiments, was warm and steadfast in his friendships, though, as with most of us, he had his share of the shadows and disappointments that come with advancing years and increased responsibilities in life; and some of these leaving their bruises sore upon the heart.

“ Then to our side with plaintive eye,  
In place of hope came memory,  
And murmured of the past, and told  
Dear stories of the days of old,  
Until its very dross seemed gold.

. . . . .

<sup>1</sup> Rev. Dr. Davies.

Preach not, O stern philosophy !  
Nought we can have, and nought we see,  
Will ever be so pure, so glad,  
So beautiful, as what we had.

. . . . .

Our steps are sad—our steps are slow ;  
Nothing is like the long ago.  
Gone is the keen, intense delight,  
The perfume faint and exquisite—  
The glory and the effluence  
That haloed the enraptured sense,  
When faith and love were at our side,  
And common life was deified."<sup>1</sup>

On the 29th of June, 1865, Dr. John B. Biddle was elected by the Board of Trustees of "The Jefferson Medical College of Philadelphia," to the chair of Materia Medica and general Therapeutics, made vacant by the death of Professor Thomas D. Mitchell, M.D.

I here approach the period when I can best speak from my own personal intercourse and observation of Dr. Biddle's life and duties as a medical teacher. Our relations afforded me abundant opportunity, and soon became so grateful to me, that it is my sincere ambition to do him justice in this direction. Certainly at that time, fourteen years ago, before the gout or other trials, or overwork, had blanched a hair or twisted a finger, Dr. Biddle was still a handsome man ; his appearance in the lecture-room was very prepossessing. His erect person and manly dignified presence, with an agreeable manner, combined to make him a graceful speaker who won the attention of all who listened to him. He was always clear and impressive, and not unfrequently, when warmed by his subject, eloquent ; he has been termed, in a recent notice of him, "*a medical orator* ;" and those who were able and

<sup>1</sup> W. W. Story.

were afforded occasions to judge, will recognize the truth of that description ; he deserved the application of the term. With an excellent voice, a fine presence, and an easy, fluent delivery, no one could truly deny that he was a forcible, an accomplished, and a captivating speaker. Hence Dr. Biddle was deservedly a favorite and very popular lecturer. The matter that came from his mind was always worthy of the excellent manner in which he conveyed it to his class, for he put forth sound theories, and advocated true principles in well arranged order, bringing a clear comprehension of his teachings, and securing their full acceptance by the minds of his pupils.

It was his habit to carefully prepare his lectures, with all the needful study, on the evenings previous to delivery ; but he used no notes, or at least very rarely, in the lecture-room.

Dr. Biddle held strong opinions about the use of certain drugs, and these he seriously impressed upon his class, so that they should not be readily forgotten. Indeed, his learning and enthusiastic interest for his favorite branch of science were such, that he would hold up a specimen of its endless family from his table to the view of his class, expressively turning his eye from the one to the other—feeling the remedial value of the plant, or root, or mineral, and as if the dumb material itself would grasp the minds of his listeners to aid instruction.

There was perhaps the most positive realization of these impressions of Dr. Biddle, as he was in the chair of *Materia Medica* ; for he was thought less successful as a clinical lecturer; though even there he did not fail to be instructive, and was always liked by the attending class.

As the presiding officer of the medical faculty, his colleagues ever held him in respect and admiration ; they re-

cognized and spoke with grateful confidence of his admirable qualities in being ever apt and ready, courteous yet decided, without being dogmatic. With judicious executive abilities and parliamentary knowledge, he shaped and guided their deliberations in a safe and satisfactory manner. And these valuable qualities of mind, correct feelings and knowledge, were no less observed and needed in his difficult duties as Dean of the Faculty, not the least among which were the honorable settlement of difficulties incident to the assemblage of large bodies of young men of various habits and dispositions, away from their homes, and subject to the temptations of a large city, many of them, for the first time.

To win the respect and attachment of such a body of medical students, from year to year, with friendly, fatherly interest, was the means Dr. Biddle successfully used to exercise good influences upon their lives; in return they gave proofs of their confidence and esteem by their good conduct in the lecture-room, and also in privately seeking his advice whenever there was trouble or discord among them. The large class of 1878-9 (numbering 572) at the time of Professor Biddle's death and funeral services, gave touching evidence of their feelings here alluded to: they sought permission of the family of Dr. Biddle to take a last farewell of their honored teacher, as he lay upon his bier, and the entire class, one by one, passed before his solemn, pale countenance as it rested serene in death. They had sent, by way of memorial, a *vacant chair* made of flowers, as the gift of the class, which stood at the foot of the coffin in testimony of their affection, and of sorrow for their loss.

In the course of Dr. Biddle's official duties as Dean, he quietly settled or disposed of important and troublesome questions for the interest or prosperity of the Jefferson Col-

lege; few of these were generally known, but they displayed, to those acquainted with them, the prompt good sense with which he acted. I recall an instance when it was appropriate to give publicity to his action, and I quote the occurrence as told in his own words in his introductory to the class, in October, 1873.

“A few days ago, a young lady from a Western State, presented herself at the office of the Dean of the Jefferson Medical College, desiring to enroll her name in the college books as a matriculate. She was referred to the appropriate institution, and discussion of the reasons of her exclusion was declined. I have no wish, however, to avoid the woman question, and would say at once to those of the gentler sex who aspire to enter our ranks, that we cordially welcome them, and wish them all the success they deserve. We recognize their superior tenderness, their uniform patience, their courage, and their ability. But let me say to them also that it is no light thing to become physicians. If they are prepared to brave the difficulties that they must inevitably face to enter upon a career where the surroundings present so much that it is naturally distasteful to them, let them come on. But they must be willing to subordinate love and marriage to the stern requirements of the most exacting of avocations; to yield up the concessions, the deference, the amenities, which have heretofore been so willingly paid them. If they come into the arena, they must come as equals. If they want to fight the battle of life side by side with their brothers, they must be prepared to be struck down in the struggle. We would spare them the contest, not because we desire to exclude them from the prize, but because we know that, whatever their talent, whatever their perseverance, the inferiority of a feebler and more delicate physical organization is insurmountable.

“Woman is the best of nurses—

“‘When pain and anguish wring the brow,  
A ministering angel.’

"If she be wise she will not revolt against the position which nature has assigned her. And I believe that the great majority of women do not desire change. The cry for new rights is loud, but it comes from the few. The many feel that the first of woman's rights is the love of man, as the best thing for a man is to love a woman. And the clatter of all the female men in the world cannot alter the laws of nature."

Thus spoke Professor Biddle to his class of 1873, and in six years the sequel seems to show, to some degree, that women have "come into the arena," in the recent wretched female exhibitions of pedestrianism in this city and elsewhere--sad, injurious, and demoralizing results of giving countenance to the wrong-minded agitators of this unsexing of woman.

In the summer of 1878 Dr. Biddle suffered from a protracted and obstinate diarrhœa, from the effects of which he never wholly recovered. In July, 1878, he sailed for Europe, though his gouty threatenings filled him with apprehensions which were realized by his having a severe attack during the passage across the ocean. On his arrival in England this had become somewhat mitigated, and he was enabled to travel up to London, and thence on the continent as far as the Rhine baths. This portion of his trip was, however, accomplished with much inconvenience, the gout having re-developed to such an extent as materially to interfere with his ability to endure motion, or effort of any kind.

At the end of August, nevertheless, Dr. Biddle returned to Philadelphia, and entered upon the duties of his Deanship, and prepared for those of his chair, which he continued to discharge up to the Christmas season.

About this time, in paying a professional visit, on a stormy day, to one of the institutions of which he was the

medical adviser, he was greatly exposed and contracted a severe cold. He made light of this, however, regarding it as one of the evidences of the gouty bronchitis to which he had long been subject; and so anxious did he feel with regard to his professional obligations, that it was with some difficulty that his medical attendants could prevent him from leaving the house. At this time his trouble was of a pleuritic nature, affecting the right side, without any decided pneumonic complications. A prominent feature of his case was the extreme depression and weakness (*malaise*, he would persist in terming it) which continued to increase until the termination of his life.<sup>1</sup>

I was daily at the bedside of Dr. Biddle during the greater part of his illness, there to see him surrounded by his wife and daughters, gently performing and interchanging the duties of nurses and comforters. An experienced man nurse became necessary only during the last few days, and it was during these that, by the doctor's request, his kinsman, the Rev. Wm. P. Lewis, administered to him the communion of his church. This was consistent with his faith and his practice as a member of St. Stephen's, where he attended with his family. His religion was in his life and heart, and not on his tongue; he did not make it the subject of argument, and the privileges which he claimed he also yielded to others.

On the 5th day of January, 1879, Dr. Biddle took to his bed; his acute pleuritic symptoms were now greatly alleviated, but it was evident that his vital powers were gradually weakening. Three days before his death he suddenly complained of an intense abdominal pain, which steadily increased while consciousness remained. It was evident that, from some cause, peritonitis had been lighted up, and he

<sup>1</sup> I obtain these details of symptoms from Dr. John H. Brinton.

became slowly but surely weaker and more exhausted until on Sunday, the 19th day of January, 1879, at  $7\frac{1}{2}$  P. M., he passed away. He had retained his consciousness until within two or three hours of his death, and at all times he exhibited the patient fortitude under suffering, and the sensitive unwillingness to cause others trouble, which were so characteristic of the man.

A few days before his death Dr. Biddle directed that a *post-mortem* examination should be made of his body, and named the anatomist whom he wished to conduct it. The autopsy showed pleuritic adhesions over the middle lobe of the right lung, with some effusion in the pleural cavity. In the peritoneal cavity acute peritonitis had occurred, and this was undoubtedly the proximal cause of his death. There was no typhoid ulceration proper of Peyer's patches, although in the cæcum an old indolent ulcer was detected, which evidently dated from the time of the diarrhœa of 1878. The small intestines offered no evidence of recent inflammation.<sup>1</sup>

Dr. Biddle was chosen an attending physician of the "Pennsylvania Institution for the Deaf and Dumb," in January, 1841; his first colleagues there were the late Dr. George B. Wood, for so many years the president of this college, and now its benefactor by his will, and Dr. Joseph Pancoast, the renowned surgeon and anatomist. At a meeting of the Board of Directors of this Institution on the 5th of March, 1879, the following resolutions were introduced by Mr. Joseph Patterson, and unanimously adopted by the Board.

"Resolved, That the Pennsylvania Institution for the Deaf and Dumb, having lost, by the death of Dr. John B. Biddle, the valuable services of its capable and faithful physician, the directors

<sup>1</sup> I obtain the facts of the *post-mortem* examination from Dr. John H. Brinton, who was present.

desire to express, and record in the minutes of the Board, their sorrow for his death and respect for his memory.

*"Resolved,* That we mourn the death of Dr. Biddle, who, for more than thirty years, was the Medical Director of this Institution, not only as the loss of its accomplished physician, ever prompt and intelligent in the discharge of his official duties, but of a friend, whose attractive and commendable personal qualities secured our great respect and esteem.

*"Resolved,* That Dr. Biddle was faithful and honored in the schools of medicine, and for his cure and treatment of the sick, and in all other relations of a laborious and useful life he was distinguished by a high sense of honor, an unselfish fidelity to duty, ever exhibiting in his walk and conversation the graces of a thorough and dignified manhood, which received our respectful regard in his life, and now prompts this sincere expression of our sense of his virtues, and of our sorrow for his lamented death."

On introducing these warmly eloquent resolutions, Mr. Patterson prefaced them by such appropriate and appreciative remarks, that I cannot resist the wish to quote from them at least the following. He said :—

"I met Dr. Biddle in Homburg, in Germany, last August, whither he had gone, during a brief visit to Europe, in pursuit of health. His apparent feebleness of body was so manifest that I knew he was unfit to travel at that time, but, having secured his passage homeward for a date that would require him to leave Homburg in a few days for a fatiguing journey to Liverpool, I requested and urged him to postpone his departure for a month or more to obtain the required health and strength for his return journey and voyage; but so inflexibly stern and unselfish was his sense of duty that he refused, because, as he said, his delayed return would impose on his colleagues of the Jefferson Medical Faculty labors which should justly rest on him alone; and he re-

turned at the appointed time, and not many months after that came the solemn termination of his life."

In the year 1856, July 9, Dr. Biddle was elected Attending Physician to the Girard College for Orphans, which office he filled until his last and fatal illness. At a meeting of the Board of Directors, February 12, 1879, the following minute was adopted :—

"Since the last meeting of this Board, the Girard College has been deprived by death of the services of Dr. John B. Biddle, and it is fitting that that fact should be placed on record.

"During twenty-two years' employment as Visiting and Consulting Physician, he gave entire satisfaction to this Board, and performed his duties with signal ability, and it is

"*Resolved*, That the President of the Board be directed to convey to the members of his family their sympathy in the loss which has befallen them, and the assurance of their high esteem for his memory."

The Board of Inspectors of the Philadelphia County Prison, January 21, 1879, adopted the following :—

"*Resolved*, That in the death of Dr. John B. Biddle, the Board sustains the loss of a member who had at heart the true interests of the institution, whose leading director he was for more than twenty years; and that the success of the administration of the prison is greatly due to the care and solicitude with which he watched over its management.

"*Resolved*, That this Board feels especially the deprivation it has sustained in the loss of a presiding officer, whose deep interest in the affairs of the prison was beneficially displayed, and whose discrimination in appointments promoted the efficiency of the committees, and whose prompt, firm, and courteous decision

infused that harmony in discussion in the Board, and that concurrence of action in the committees, which distinguish the deliberations and labors of the members of the Board.

“*Resolved*, That the death of Dr. Biddle calls upon the members of the Board to mourn the loss of a dignified presiding officer, a genial companion, and a faithful friend—a man who, in position as an inspector of the prison, was most anxious to sustain the respectability of the administration, and jealous of every attempt to impair its usefulness.

“*Resolved*, That this Board will attend the funeral of its deceased President.

“*Resolved*, That the members of this Board sympathize with the family of Dr. Biddle in their irreparable loss, and offer them their hearty condolence.

(Signed)

JOS. R. CHANDLER,

*Chairman.*

EDMUND SMITH,

*Secretary.*”

The Committee of the College of Physicians “on Revision of the United States Pharmacopœia,” send me as follows:—

“*From the Minutes of February 1, 1879.—Dr. Ruschenberger stated that Dr. John B. Biddle (born January 3, 1815, died January 19, 1879, aged 64 years) had been a member of the committee appointed by the College of Physicians of Philadelphia to revise the Pharmacopœia of the United States, since its formation, October, 1877. He had been punctual in attendance—never absent from its meetings when the condition of his health permitted him to be present. He was interested in the work confided to the committee, and performed his full share of it. His learning and good judgment were conspicuous, and enhanced the value of his labors.*

“*By the death of Dr. Biddle the Committee has lost a most*

valuable member and a greatly esteemed companion. The Committee laments sincerely the loss of an eminent physician and philanthropic gentleman, and sympathizes with the profession in a common bereavement."

I cannot better terminate the list of well-merited and honorable tributes to the memory of the late Dr. Biddle, than by gratefully accepting this for my memoir, from the Committee of the College. It is composed of men above the small jealousies too common in medical life and its competitions, and their honest, eloquent praise furnishes occasion to remind their "Fellows" of this organization of their great and unremunerated services to the institution. Dr. Biddle was one of them, and few of his friends ever knew it until now.

Yet the revision of the United States Pharmacopœia is a task of serious labor and responsibility; its duties demand close and careful investigation, and the highest sense of justice, as well as impartiality, in regard to the authorities in this branch of science at home and abroad. The example of this Committee in faithful, unselfish devotion to the difficult work they perform, with no other compensation than that of conscious usefulness to their chosen profession, should stimulate in their Fellows similar industry and generous ambition.

I have given them, in this memoir, one such example, in whom we have seen these noble characteristics and their fruition, from the early age of twenty-three to the ripe one of sixty-four—forty-two years of a life spent at the post of duty, and never shrinking from any demands upon the physical or intellectual faculties which he believed were due to the service of his fellow-creatures.

C A S E  
OF  
SPINAL PARALYSIS

PROBABLY DUE TO SO-CALLED SPINAL EXHAUSTION.

By  
JAMES TYSON, M.D.,  
PROFESSOR OF GENERAL PATHOLOGY AND MORBID ANATOMY IN THE UNIVERSITY  
OF PENNSYLVANIA; ONE OF THE PHYSICIANS TO THE  
PHILADELPHIA HOSPITAL, ETC.

[Read August 1, 1877.]

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H. F., about twenty-five years of age, had been indulging in sexual excesses, often more than once in a night, as well as occasionally during the day, for some weeks, when, after spending an afternoon and evening at the park, during which he had been drinking freely of beer, whiskey, etc., he came home partially intoxicated, and went to bed. He lay in a draught, between two windows, and perspired most copiously —this on or about the 4th of July, 1875. On the next day, he observed that he had lost power in his legs, more in the *right* than in the *left*.

This state of affairs continued with little change for several days, when he went to Cape May, thinking that he might be benefited by bathing. He returned on the 12th of July, the symptoms having gradually increased, and I first saw him on the 14th. I found him able to walk with the aid of a stick, but with difficulty. The paresis was much more marked in the right leg than in the left, but he could still, by an effort, draw up both legs. There was now also impaired sensibility in both legs, but more marked in the left, that in which there was less paralysis of motion, but the *right* half

of the *trunk* as far up as the nipple anteriorly, and a little below the angle of the scapula posteriorly, and from the median line in front to the median line behind, was *hyperæsthetic*. In illustration of the phenomena of impaired sensibility, a fly could be appreciated crawling over the right foot and leg, but could not be noticed on the left. Reflex action remained, though perhaps slightly impaired. These conditions were confirmed on Saturday, July 17, when Prof. Francis Gurney Smith saw the patient with me.

It was thought that the symptoms were those laid down as of spinal congestion. The patient was put to bed, and was ordered the fluid extract of ergot in  $\frac{f}{3}$ j doses, three times a day, increased in two or three days to four fluidrachms a day, to which twelve drops of tincture of belladonna were added as often. Counter-irritation by blisters and by vesicating liniments was directed at the same time. In four days his back was thoroughly vesicated, and the belladonna had produced its physiological effect. The dose of the latter was diminished, but the ergot was kept up until the 23d, when there was evident derangement of the stomach, and it was discontinued, and substituted by a simple acid tonic. Notwithstanding this faithful use of counter-irritation, ergot, and belladonna, the patient grew worse, and by the 20th was absolutely unable to draw up either leg, although the toes could still be moved by action of the extensors.

On the 24th, Prof. H. C. Wood saw him in consultation. Electro-muscular contractility was found to be perfect. He was ordered phosphorus,  $\frac{1}{5}$ th of a grain, three times a day, which on the 29th was increased to the  $\frac{1}{7}$ th three times daily, or about  $\frac{1}{2}$ th grain a day. The acid tonic was continued, and frictions with salt and whiskey instituted. By the 29th there was no improvement in motor power, but his tongue had cleaned up, his appetite was better, and he was in good spirits. He thought, however, that the hyperæsthesia of the right half of the trunk had disappeared, and was replaced by numbness. On the 2d of August this disappearance was undoubted, and although there was no positive

gain in power, there was a feeling on the part of the patient that he was better even in this respect.

On the evening of the 4th of August, he began taking  $\frac{1}{15}$ th of a grain of phosphorus three times a day, making about  $\frac{1}{8}$ th of a grain per day. At this time there appeared less difference in the sensibility of the two sides, and, without doubt, sensibility had improved, but there remained total motor paralysis; he could not even move his toes. Numerous boils also had commenced to make their appearance, and Basham's mixture of acetate of iron, with  $\frac{1}{18}$ th grain of sulphate of strychnia, three times a day, was substituted for the acid tonic mixture.

August 21. The phosphorus was continued in doses of  $\frac{1}{15}$ th grain three times a day until the 12th, when it was omitted. There is evident increased reflex sensibility, and the patient thinks some gain in power, although it is scarcely appreciable. The boils have disappeared under the use of the iron. The phosphorus is to-day recommenced in doses of  $\frac{1}{15}$ th grain a day, to be rapidly increased to  $\frac{1}{8}$ th grain a day. The iron is omitted.

September 8. He has had an attack of diarrhoea, which seems to have weakened him a little, but he is otherwise in the same condition as at last note, except that sensibility seems improved and equalized. When the diarrhoea came on he omitted the phosphorus.

Sept. 12. Ordered phosphorus to be recommenced. Feels in excellent spirits and thinks he is improving.

Sept. 24. Continued phosphorus until the 19th, several days before which the dose was increased to  $\frac{1}{8}$ th grain a day. Found him sitting up and in excellent spirits. Made a careful examination of legs, and found in the right the sense of touch perfect; but sensibility to pain, as by pinching, is still deficient, and there appears to be an absence of the power to appreciate cold: that is, if a cold hand is placed in contact with the thigh or leg, the skin, while it perceives the contact, fails to appreciate that the object is cold. As to motion, he can flex the right foot, raise the right heel, push forward

and backward the right leg, and even, by forcible effort, raise the right foot from the floor. He can also move all of his toes.

As to the *left leg and thigh*, the sense of touch is greatly improved; also the apprehension of painful impressions, like that of pinching. Motion, however, is by no means as good as in the right leg—he cannot flex the foot as on the right side, and although he can, with difficulty, draw the foot backward, he cannot push it forward, and while he can move the great toe, he cannot move the others. Ordered phosphorus to be recommenced on the 26th,  $\frac{1}{4}$ th grain, with two grains of sulphate of quinia, twice a day.

Oct. 12. There is a very decided improvement, both in sensation and motion of both legs, although motion is still better in the right leg than in the left, and sensation better in the left than in the right. Has walked across the floor with assistance three times in the past week. Is taking now  $\frac{3}{4}$ th grain phosphorus once a day. Improvement thence continued steadily, but nearly a year elapsed before he completely recovered.

July 12, 1876. The patient called to see me to-day; all motion is perfect; he can walk miles at a time, and has walked recently six miles without consciousness of any defect in motion. As to sensation, sensibility to touch seems perfect, and equally so on both sides, except that on the right there would seem to be remaining a slight perversion, which is thus shown: when he puts his leg into cold water a sensation of warmth is felt. This has been the case also with the left leg, which is returning to its normal condition in this respect; there is, perhaps, a trace of this perversion remaining.

This case appears to me to be of sufficient interest to report to the College, for the following reasons: First. The condition occurred in a young man of previously vigorous health. Second. It was followed through a long period to a favorable issue. And, finally, it is one of a class of cases in which the

pathology is not precisely determined; in which, perhaps, three views are admissible, of which two are diametrically opposite, calling for a treatment as opposite; further, these two opposite modes of treatment were both adopted with the results reported.

The better to weigh the symptoms let us recall the most important of them. First. After the circumstances named, there appeared a loss of power in the lower extremities, at first partial, gradually increasing, so that as late as eight days after it set in, the patient could still walk with the aid of a cane, while the paresis was greater in the right leg than in the left. Sensibility was impaired in both legs, but more in the left, and there was for a time *hyperesthesia* on the *right* side of the *trunk*, the side of worse paralysis. Under the use of ergot and belladonna the patient gradually grew worse, and eight days subsequently was absolutely unable to move either leg. Nearly coincidently the hyperesthesia of the right half of the trunk disappeared, and was replaced by numbness. In recovering, the right leg, although worse paralyzed in the beginning, seemed to recover its motion first. Thus, whatever the remote cause, we have the direct agency a gradually increasing one, giving us at one stage, in part at least, the physiological phenomena of section of a lateral (here the right) half of the spinal cord, *i. e.*, paralysis of motion and increased sensibility on the same side, and loss of sensation on the opposite side; along with, of course, though to a less degree, paralysis of motion of the opposite side, showing that the entire cord was being influenced, but the right half most.

It must be admitted that the theory of simple con-

gestion is sustained by all the symptoms in the case. This would first produce hyperæsthesia until the bloodvessels became so much distended as to compress the nerve tubules, when there would be paralysis of sensation and motion alike, as was here the case. On the other hand, the therapeutic test quite failed to bear out this view, the symptoms steadily increasing under the use of ergot and belladonna, which should have constricted the capillaries and relieved the symptoms. But are our therapeutics of these remedies so well determined as to justify such a conclusion on a failure to produce these physiological effects? I think it can hardly be claimed that they are, and it is barely possible that if these medicines had been continued in such moderate doses as would not have deranged the stomach, such use might have been attended with as good results as the simple restorative plan of treatment, which was followed more or less continuously to the ultimately favorable issue.

The phenomena of the case are also explained by supposing the gradually growing pressure of a slowly increasing intermeningeal clot, poured out first on the right side and extending around the cord. One symptom alone may require a little further explanation—the hyperæsthesia of the right half of the trunk. It will be recalled that physiologists ascribe the increased sensibility on the side of section, in section of a lateral half of a spinal cord, to cutting of filaments of vaso-motor nerves, producing increased vascularity, and, therefore, increased function on the side of section, and consequent hyperæsthesia. The operation of a clot pressing upon the spinal cord from its exterior,

could scarcely produce this effect, as it would compress bloodvessels and nerve tubules alike. This symptom would, perhaps, be better explained by the pressure of a clot in the substance of the medulla spinalis, disintegrating and destroying it. But it would certainly be an unusual lesion in one so young as this patient, while the repair, which rarely takes place to as complete a degree as did this, would scarcely have been as rapid as it was here. On the other hand, the area of hyperæsthesia was a small one. This symptom was, further, of such short duration, that we can easily conceive of a corresponding small area of increased vascularity in the cord to account for it in connection with any view.

The remaining condition of the cord which is possible, is the one known by the somewhat indeterminate expression of "spinal exhaustion," following only, as far as I am aware, sexual excesses. I have known the term "anæmia" applied to this condition of the cord, though I think with doubtful propriety. The exact condition of the cord under these circumstances is, of course, unknown. It may be, indeed, that its physical state is unchanged, as far as means of observation are available. Some such condition, however, undoubtedly exists, and is comparable to the state of a nerve which has been excited by an electrical current, until it no longer responds to the stimulus. Similar is the condition of an overworked brain, and also an overworked muscle. This view is confirmed by the history of the case, the results of treatment, and the ultimate recovery. The only symptom it does not satisfactorily explain is the hyperæsthesia, which was present for a time only on the right

side. In such a condition as this it would seem that loss of sensation should accompany loss of motion *pari passu*. Again, too much should not be claimed for the results of the restorative plan of treatment, by iron and strychnia, the latter in tonic doses only, and the free use of phosphorus. The improvement, it is true, progressed steadily from the time that this mode of treatment was adopted; but it was so gradual, and, although recovery was complete, it was after so long a time had elapsed, that it is impossible to say from a single case that it was not due to the natural tendency to recovery, which belongs to vigorous youth.

There being difficulties in the way of each diagnosis, it becomes practically settled by the plan of treatment one would adopt in a similar case under similar circumstances. To this I unhesitatingly answer that I would follow the restorative plan here adopted to the exclusion of any based upon a view as to the inflammatory character of the lesion.

With regard to sexual excesses assigned as the cause of this condition, it is, of course, well known that they are relative, the most extraordinary instances being related where no evil effects seem to have followed an almost incredible degree of indulgence. In other cases, results similar to that here obtaining seem to follow a comparatively moderate indulgence. It will be recalled that it was here nightly, often more than once in a night, and sometimes during the day, and this for some weeks, a degree quite sufficient to bring about the condition of exhaustion here suspected.

C A S E

OF

GUNSHOT WOUND OF THE ABDOMEN, PERFORATING THE ASCENDING COLON.

By

J. EWING MEARS, M.D.,  
SURGEON TO ST. MARY'S HOSPITAL, ETC.

[Read November 7, 1877.]

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WHILST on duty as Surgeon of the First Division, National Guard, of Pennsylvania, during the labor riots of last summer, the following case came under my observation :—

H. S. Shaw, *aet.* 21, a corporal in one of the companies of the Sixth Regiment, First Division, National Guards of Pennsylvania, was wounded on the morning of July 22, 1877, during the riots which occurred in Pittsburg. The missile, a large, conical rifle-ball, weighing, with charge and metallic case, one ounce and a half, entered the abdominal cavity through the ilium, striking the bone at a point four and a half inches from the vertebral column, and two and a half inches from the anterior superior spinous process, just below the crest. The ball passed in a line almost directly forwards, and emerged at a point four inches from the anterior superior spinous process of the ilium, and three and a half inches from the umbilicus, and three-quarters of an inch below it.

When the wound was received the patient was marching in line, and he states that he felt only a slight sting. He was not aware of the serious nature of the wound until he

saw the blood which flowed, when he left the ranks and walked into a church near at hand. He remained there until the afternoon, when he was transferred to St. Francis's Hospital, and was placed in the surgical wards under the charge of the attending surgeon, Dr. Stephenson. On the return of the troops to Pittsburg, I visited him at the hospital, and found that he had been extremely ill; general peritonitis had supervened, preceded by symptoms of great shock; flatus and feces escaped by the wound of entrance, and continued to do so for a period of six weeks after the receipt of the wound.

Under the skilful care of Dr. Stephenson, Corporal Shaw so far recovered as to be able to be removed to Philadelphia, August 13. With the exception of a slight return of unfavorable symptoms, caused by an over-indulgence in improper food, he rapidly progressed toward recovery, and by September 3 the wounds were closed.

Desiring to obtain a pension, the patient applied to me for a certificate of disability, and I had the opportunity of examining the results of so formidable a wound. The wound of entrance was represented by a large, puckered, somewhat elongated cicatrix, measuring one and a quarter inches in length, and occupying the line of the crest of the ilium; the opening in the bone could be distinctly felt, and had been increased in size by the removal of a piece of necrosed bone by Dr. Stephenson during the process of healing. The wound of exit was much smaller, and slightly depressed. About the cicatrix there was an area of dulness extending two and a half inches in all directions. Below the line of the wound of exit, in the course of the colon, there was dulness on percussion. With the exception of a slight "binding" about the wound, felt in locomotion, the patient was free from

pain; the function of the bowels was, in every respect, normal; the general health appeared to be unimpaired. It seemed evident, from the examination, that the ascending colon had been perforated about the junction of the cæcum, and that the direction the ball had taken was such as to implicate alone this portion of the intestine.

The nature of the wound and the very favorable termination which ensued would seem to render a record of this case interesting, especially when considered in connection with the very unfavorable condition in which the patient was placed when the injury was inflicted. He, with the troops composing the command, had been on duty for a period of over thirty-six hours, performing duty of a more trying character than is exacted in regular warfare—fighting mob and fire—deprived of food and exhausted by a march under the rays of a scorching July sun. When wounded, he had been subjected to violent treatment at the hands of the mob, who had desisted only when assured that the wound received was a fatal one.



ON  
MEDICAL-MISSIONARY WORK:

WITH SOME NOTES ON THE CONDITION OF MEDICINE IN JAPAN.

By

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[Read March 6, 1878.]

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IN the spring of 1870, Dr. John C. Berry graduated at the Jefferson Medical College. He went to Japan as a medical missionary of the American Board of Commissioners for Foreign Missions, in 1871, and after the most arduous labor returned to this country in 1877 to recruit his broken health. Through his kindness, and that of Prof. Goodell, to whom he has given the books referred to, I have the pleasure of exhibiting these books and instruments. I had hoped that he would be here this evening himself, but in his necessary absence I shall endeavor to give the chief facts which he has stated to me.

Dr. Berry arrived in Japan in the spring of 1872, and was at once appointed the Medical Director of the European Hospital at Kobè, the remuneration being the privilege of using the examining-room and one ward for a native dispensary. At the end of nine months he had ten students. By this time his dispensary work had become so arduous that he resigned his connection with the Hospital, and with the co-operation of native friends opened another dispensary in a

more favorable place. But in a few months, in order to avail himself of proffered government aid, he changed to a still larger building owned and supported by the government as a hospital under native management. His students had now increased to twenty.

During this time he had often observed cases of *Kukké*, a disease resembling the *Beriberi* of India, but so modified by climatic and other influences as to present peculiar and independent features. Partly to learn the pathology of this disease, but chiefly to afford the students an opportunity to study anatomy, he wrote to the government in the winter of 1872-1873 requesting the privilege of teaching human anatomy by dissection at the hospital, and asked that the unclaimed bodies of criminals should be furnished him for the purpose. Fruitless attempts had been made before in the same direction, but this application met with a singularly favorable response. The request was forwarded by the local to the central government with commendable promptness, and in a few days a favorable reply was received, and the local authorities were directed not only to grant the privilege, but to construct an excellent dissecting-room, which was completed in May, 1873. Owing, however, to Dr. Berry's absence on imperative medical-missionary tours, the building was not opened for use until November 8, 1873.

On the day following the receipt of the first two subjects, the physicians of the Hiogo prefecture and neighboring provinces met at the dispensary, when the exercises were opened by reading in Japanese a brief history of anatomy (based largely on my Introductory Lecture on that subject), written and

translated at the request of a number of Japanese physicians. After an hour and a half spent in reading, the circulation of the blood was studied, and then those present were shown the dissection of the brain, these studies occupying the entire day. The next day, with fifty students, the regular course was begun; Dr. Thornicroft, a resident English physician, assisting in the anatomical work. So earnest and zealous were the students that they scarcely allowed themselves time even to eat. Translations of parts of my edition of Heath's Practical Anatomy were early made and widely copied, and proved of great service. Subsequently a more systematic course was entered upon, Dr. Thornicroft and Dr. Nishi (native) teaching Anatomy, while Chemistry and Physiology were taught from English text-books by Dr. Kimura (native), and Materia Medica, Theory and Practice, Surgery, Midwifery, and Gynaecology, by Dr. Berry. In 1875 the government regarded this medical school with such favor as to place in it, at government expense, eighteen selected young men.

Meantime another hospital of forty beds had been organized by Dr. Berry at Himeji, fifty miles away, and six dispensaries within a radius of twenty miles. To this hospital and the dispensaries he made monthly tours, meeting from five hundred to seven hundred patients each month, besides numerous physicians from the same localities. In order to instruct these physicians didactically as well as clinically, he prepared daily a lesson sheet, and sent it to the nearest station, where it was copied and thence forwarded to the next station. In this way about one hundred and twenty native physicians, who could not leave their

practice to come to the school for purposes of study, were taught the most important elementary principles of the science. The very full notes taken by Dr. Berry when a student, revised to meet the special requirements of the native students, were in this way of the greatest use to these Japanese physicians.

A feature of the work receiving especial attention was that of affording the native profession and also the public, information on epidemic diseases and on hygiene. Papers on smallpox, typhoid fever, and cholera, were circulated at different times when epidemics of these diseases occurred or were threatened, while the native press was employed to reach the masses by articles on house-building, heating, ventilation, drainage, nursing, care of children, how to prevent the illnesses of children in summer, etc.

In 1873, Dr. Berry learned much of the inner life of the Japanese prisons, and immediately set himself to work to effect much needed reforms. In October, 1873, he addressed a memorial to the government in reference to the evils of one prison (in which one of his students had been recently appointed physician), and requested permission to visit all the prisons of the country, report upon their condition, and offer suggestions for their improvement. Two years afterwards, the request was granted. The work of inspection was at once begun, and was followed by a report in which special stress was placed upon the following among other topics: viz., the importance of having the prisons managed by a central authority; a system of classification; the special education of prison officers for their position; the introduction of industrial labor; the teaching of trades and the art of self-help; the

organization of societies to aid the prisoner after his release; the abolition, except under peculiar circumstances and with peculiar limitations, of corporal punishment; making the reformation of the prisoner rather than his punishment the first aim; the importance of keeping up the domestic ties of the prisoner; the importance of Christianity as a reformatory agent; the establishment of schools for the education of the "crime class;" ventilation; prison architecture; care of the sick, etc. The Report was accepted by the government with grateful acknowledgment, published, and sent to all the prisons in the country. Upon the proposed reformatory system the government has already entered with characteristic energy.

The numerous lepers who sought relief, and the strong prejudice against them in the public mind (obliging those who could not support themselves in seclusion to become wanderers among the shrines and temples, and often to die by the roadside), suggested the importance of an effort in their behalf; a work in which only the initial steps were taken when illness obliged Dr. Berry to return to this country. A paper was addressed to the government, and has secured their promise of co-operation in carrying out the proposed plan. In endeavoring to rid the country of leprosy this paper called attention to the following facts:—

1. Leprosy is limited in its power, and cannot propagate itself beyond five generations if due attention is given to the care of its victims.
2. Under certain conditions of soil and climate, combined with whatever tends to depress the vital powers either

morally or physically, it is endemic; and these latter influences play an important part in the early production of the disease in those who inherit a tendency to it.

3. While as yet there has not been discovered any remedy for the cure of leprosy, yet it is susceptible of great improvement under proper medicinal, hygienic, and moral treatment.

4. The disease is sure to reappear if, after treatment, the patient returns to the old habits of life in which the malady first made its appearance.

5. Evidence is wanting that leprosy is contagious in the ordinary intercourse of life, but it may be transmitted like syphilis by inoculation.

The following suggestions were made for its eradication.

1. The enactment of a law that lepers should only marry among themselves, and their descendants only among others of like degree of removal from lepers (*i. e.*, the second generation to the second generation, etc.), until the fifth generation, when promiscuous marriage should again be allowed.

2. The early erection and adequate support of a large lepers' asylum in a locality favorable to the treatment of the disease.

3. A careful inquiry by a competent person into the sanitary condition of those localities in which leprosy is, and those in which it is not found, with a view of learning the general sanitary influences which do and those which do not favor the appearance of the disease in persons inheriting it.

4. Careful supervision of all lepers by the government, and the removal of all lepers, including those improved by treatment at the asylum, from their old surroundings and improper hygienic influences to the favorable localities disclosed as above.

5. The appointment of responsible physicians to reside at such selected spots, who should carefully see to it that the lepers used such food and observed such hygienic rules as should keep them in the best degree of health, should report

to the director of the asylum the reappearance of any of the old symptoms, and should see to it that the patients returned for treatment if it were necessary.

6. The co-operation of the government and the director in a careful study of the disease, and the dissemination of needful information concerning it among the people.

Dr. Berry expects to return to Japan in the autumn to resume his many duties, and with the intention of adding to the benefits he has already conferred upon Japan two other most useful and most needed charities, a Hospital for Women and a Training School for Nurses.

Such in brief is the record of five years' work by a young man recently graduated! Surely if an earnest and useful life were even now terminated he would not have lived in vain! And such a practical form of Christianity must appeal most powerfully to an intelligent nation which sees its own ministers of religion ignorant and inactive in remedying evils at their own doors, while a young American Christian physician leaves home and friends, braves the dangers of long travel by sea and land, and, for nothing but the love of his Master and his fellow-men, spends his life for their betterment, supported in his work by the generosity of his fellow-Christians.

That such medical work is needed will be readily granted on looking at these instruments and books. While we shall see some things to approve, we shall be chiefly astonished at the barbarity of the modes of practice revealed.

The native physician travels somewhat in state,

followed always by a servant carrying his medicines in a box such as I show you here.

[Medicine chest, books, and instruments exhibited.]

This one has seen service for more than a century, yet its lacquer is in excellent condition. It is eleven inches high, by twelve inches long and seven inches wide, and contains five drawers sliding to and fro. In each drawer are a number of paper boxes, whose tops are ingeniously folded so that nothing can be spilled, even if the box be turned upside down, and yet, from the absence of all fastenings, the contents are readily accessible. All the drugs, as you see, are crude and repulsive, and, among them, some roughly powdered yet easily recognized beetles are but a sample of their frequently disgusting character.

The accompanying drawings illustrate some of the Japanese instruments and modes of treatment.

Fig. 1 represents a nest of four boxes for holding small pellets, provided by the physician in case of travel, for use when the blood is heated, or cooled, etc. It is worn at the girdle, the ivory elephant serving at once as a means of retention and as a charm. A small silver spoon for dispensing the medicine is fastened by the silk cord which holds the nest together. The gold lacquer and the figures on the box are of admirable workmanship.

Fig. 2 shows one of a nest of six brass spoons of various sizes, for dispensing the drugs in the large medicine chest before shown.

Fig. 3 (lower figure) shows a fine silver needle much used in inflammation of the conjunctiva, and also on the abdomen. The hollow cylinder (upper

figure), with the needle in it, is placed on the part, and the projecting end of the needle is tapped so as to puncture the tissue. The depth of the puncture can be regulated by the relative length of the needle and sheath.

FIGS. 1-5.

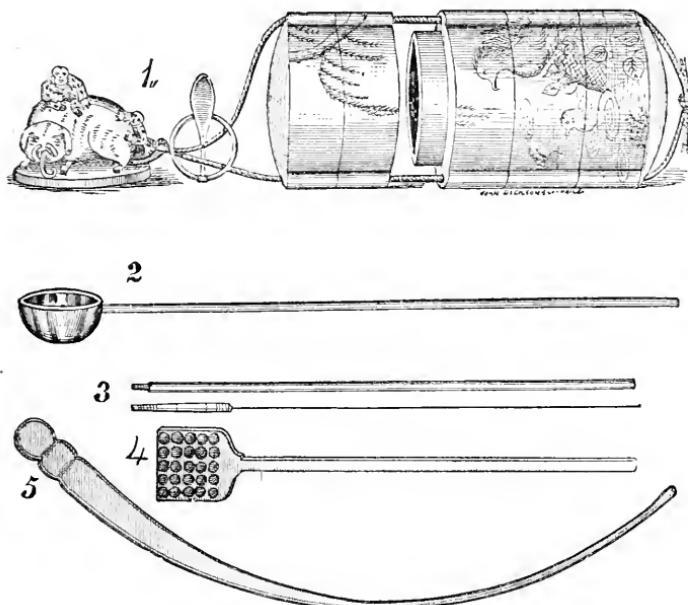
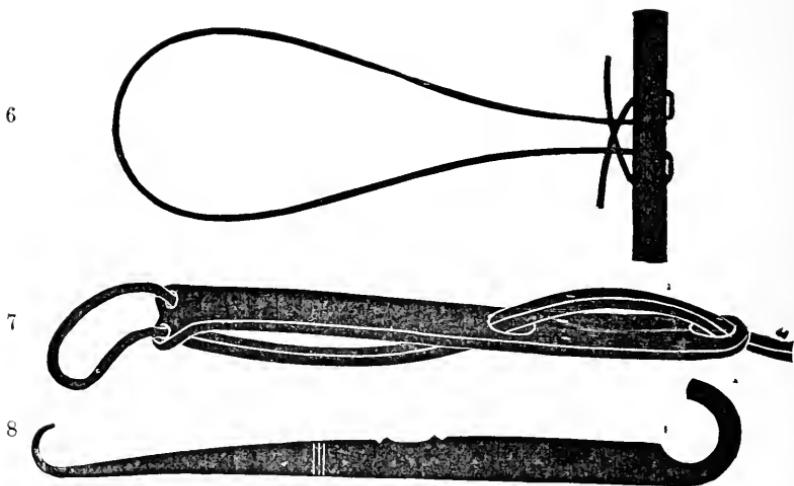


Fig. 4 represents an ingenious method of counting pellets for dispensing. After dipping it in a mass of pellets, a slight shake will displace all except the twenty-five, which are held in place by the little cups, as the marbles are held in place in our common game of "solitaire."

Fig. 5 represents a curved knife of excellent steel, terminating in a probe. This is occasionally used in anal fistulæ, but more frequently in those resulting

from serofulous or other inflammations, in the neck, groin, etc. It resembles very much the "syringotome" or probe-knife employed by the late Dr. T. T. Hewson of this city. I have used this Japanese knife very advantageously in some cases since Dr. Berry gave it to me.

FIGS. 6-8.



Figs. 6 to 11 are all taken from an illustrated Japanese "Complete Book of Midwifery" (*Saniku Jensho*), by Gihaku Mizuhara; a book in twelve volumes, each about the size of one of our ordinary monthly magazines, though of course containing vastly less matter. This book, printed in 1848, is the best Japanese obstetrical authority. Those of the native physicians who do not follow its teachings, follow, if possible, a still less enlightened practice. Indeed, most of the obstetrical work is done by midwives of the most ignorant character. A large number of engravings appear in two volumes of the work. Digital ex-

amination is made by the right index and middle fingers together. Fig. 6 shows a whalebone fillet, about one-eighth of an inch thick, the ends of which, after being softened in hot water, may either be fastened directly into such a wooden handle as is

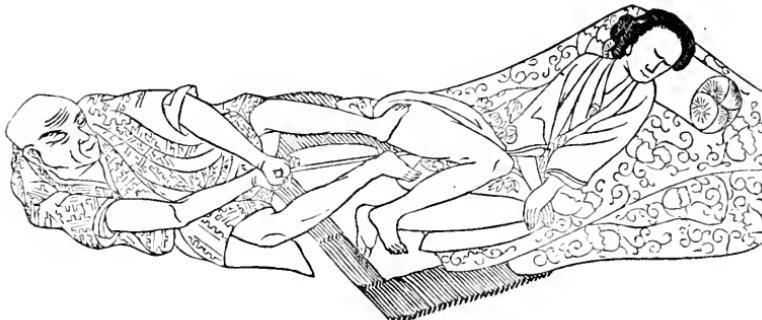
FIG. 9.



shown, or, when leverage is required, may be passed through a flat piece of whalebone (Fig. 7), when the wooden handle may or may not be attached. The fillet is then looped around any part that can be seized. Fig. 9 shows one of the most impossible attempts at extraction, while in other illustrations the

child is caught with the back, the face, or the vertex presenting. It is noticeable that the placenta is invariably represented as attached to the fundus uteri.

FIG. 10.



The next figure (Fig. 10) shows what powerful attempts are made in case those by simple traction fail. One would naturally suppose that "meddlesome midwifery" would here pause, reluctant to go further. But the temerity of ignorance knows no bounds. Accordingly, Fig. 11 shows the next pro-

FIG. 11.



cess. Human muscular power failing, the mechanical powers are called in, and a windlass, which finds its "point d'appui" on the tuberosities of the ischia, is fastened to the fillet, and the process of torture and killing recommenced. The picture is not uninteresting from an artistic point of view: the calm confidence of the doctor, the painful frown of the patient, and the sardonic smile of the nurse, well befit the respective actors. Both of the last pictures also represent well the obstetric bed. In case of failure with the winch, for sometimes even it fails, the more effective and more fatal hook (Fig. 8) is employed. With this, the uterus is raked out as we would rake coals from a furnace. Dr. Berry assures me that he has repeatedly examined cases in which the inner surface of the womb was like a ploughed field. Of course, the result of such cases is not doubtful.

In one of the plates, version is very clearly figured, but Dr. Berry tells us that it is almost, if not entirely, unheard of in actual practice, save where the influence of Western Medical Science has been felt. In fact, when an arm or a leg presents, it is not uncommon to amputate it at once, when, of course, the child bleeds to death.

But the influence of Western civilization and science is so rapidly spreading in Japan, that such barbarous practices as are here depicted must soon be of the past. It needs but a few such active, energetic young men as Dr. Berry, to revolutionize the condition of the entire profession, especially when so efficiently supported by the government. No nobler nor more unselfish work can be entered upon, whether viewed from the standpoint of morals or of medicine.



## C A S E

OF

### ULCERATIVE ENDOCARDITIS WITH PYAEMIA; DEATH FROM PERFORATION OF THE HEART.

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M. S., aet. 34 years, was admitted to the Medical Ward of the Philadelphia Hospital on a Monday in April, 1878.

The patient had the appearance of being well nourished; was a washerwoman; was married; had had two children; and stated that she had never been sick before in her life. Rheumatic history was carefully searched for, but none obtained; she denied ever having had syphilis, and no eruption nor scars were found to disprove her statement. She complained of obscure pains in the joints, and of muscular pains, but when questioned closely stated that the feeling was one of stiffness rather than pain, the symptoms all being of very moderate intensity. There was a rise in temperature. She was seen that evening shortly after admission by the resident physician, who, thinking the case to be one of muscular rheumatism, ordered her a dose of jaborandi. The following morning she expressed herself as feeling perfectly well, she had sweat profusely, and the temperature was nearly normal.

Owing to my absence, my colleague, Dr. Edward T. Bruen, who had temporary charge of the ward, and to whom I am indebted for the following notes of the case, after instituting

rigid inquiries which elicited the above history, made a careful examination.

Upon percussion the heart was found in its normal position, and not hypertrophied; the apex beat was normal. The pulse was regular, rather small, resembling that found in cases of mitral regurgitation. Auscultation revealed a basie, systolic murmur, but this murmur was transmitted downwards to the ensiform cartilage, and was heard louder at that point than at the base. There was also a murmur at the apex, and this was slightly transmitted to the axilla. The murmur was not found in the arteries of the neck, nor was either murmur heard in the back. The first murmur was blowing, low in pitch, and occupied the whole of the systole. At times the radial pulse became more feeble for one or two consecutive beats, and then the murmur was faint or entirely absent. The venous system was moderately engorged throughout, but there was no venous pulse. This moderate but still marked engorgement was more than could be accounted for by the apparently slight valvular lesion. The second sound of the heart was impaired; it was but feebly accentuated, and had not the clear, defined characteristics of health.

The lungs were normal throughout. There was no dyspnoea. There had never been hemorrhages. There had never been dropsy, nor had the patient suffered from headache. The urine was not albuminous. The patient stated that she had of late suffered at times from gastric irritability, and that this still remained. She was ordered the Tinctura Ferri Chloridi, and a pill of Digitalis gr. ss, Quiniæ Sulphat. gr. ss, Extract. Gentianæ gr. j, thrice daily.

The report on Thursday morning stated that the patient had vomited all through the night. The temperature on the previous evening had been very high, but was now, as will be seen by the temperature chart (Fig. 1), lower than normal. There was slight joint pain, no tenderness, and no other bad symptoms. Heart the same as before. Medicine discontinued.

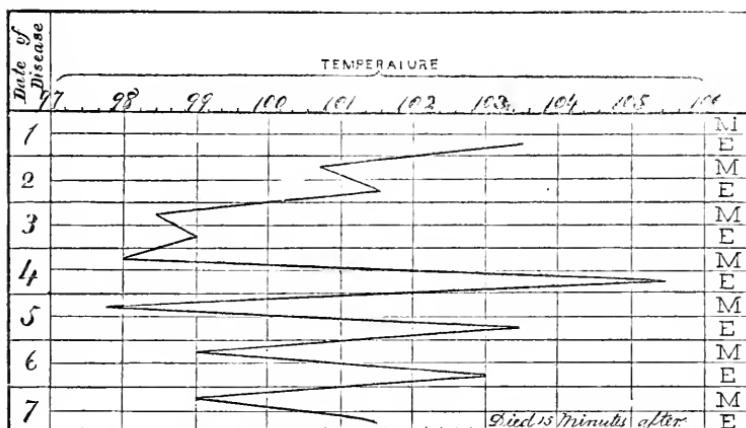
During the day the vomiting ceased, the pain disappeared,

and the patient felt comparatively well; in the evening the thermometer again showed a rise.

*Friday morning.*—Patient seems perfectly well. She asked to get up, but this was forbidden. In the evening the temperature again rose. She was unusually bright.

*Saturday morning.*—The patient sat up in bed about six o'clock to arrange her hair, when she complained of sudden and great dyspnoea, and intense pain. Shortly afterwards she became almost collapsed; the feet and hands were cold, and the body blue and covered with sweat; the facial expression anxious; and the radial pulse almost imperceptible. The respirations were very rapid.

FIG. 1.



When seen by Dr. Bruen, at ten o'clock, these symptoms continued unabated. He at once examined the heart, and found upon percussion a dulness reaching from the second to the sixth rib on the left side, and from the right sternal border four inches to the left. This broad area of dulness extended over the whole region of the pericardium. Surrounding this area of dulness, pulmonary resonance was clearly and sharply defined. Palpation revealed no apex beat. The sounds of the heart were scarcely audible, and were distant; but when distinguished, as they occasionally were, an absence

of murmur was noted. The respiratory murmur was harsh, but was heard distinctly everywhere. The diagnosis of extensive pericardial effusion of course was clear. The very sudden onset explained the gravity of the symptoms.

It will now be seen that as the temperature and vomiting indicated pyæmia, and the murmurs revealed an endocardial roughening, the diagnosis of ulcerative endocarditis with rupture of the heart seemed plausible. On this account paracentesis was deemed unnecessary. During the day the severity of the symptoms decidedly ameliorated, and at 5 P. M., when again seen, the patient expressed herself as feeling better; she was, and had been, perfectly conscious; the pulse could be felt at the wrist; the general surface of the body was warmer; and the heart sounds more audible, and with no murmur. The precordial pain had entirely disappeared.

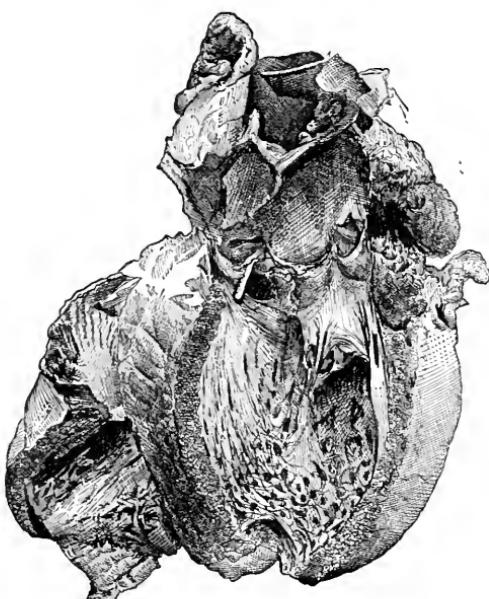
The patient continued to do well till ten o'clock that night, when suddenly the above-mentioned symptoms returned with all their previous intensity, and she died in a few minutes.

A post-mortem examination was made fourteen hours after death. Body well nourished; no scars anywhere to be seen, and no evidence of specific disease.

When the sternum was removed, the pericardial sac was found distended to a very great degree. The lungs appeared somewhat engorged, but there was no œdema, and otherwise they were perfectly healthy. When the pericardium was opened, about twelve ounces of fluid blood were removed, with a large amount of clots of various sizes. Adherent to the heart was a stringy clot, which, when traced to the point of its apparent origin, was found attached to a process springing from the base of the aorta posteriorly, at the junction of the aorta and the cardiac muscle. An opening was carefully searched for at the place where the clot was adherent, and one was found so small as scarcely to deserve the name, being merely large enough to allow the passage of a No. 8 needle. The process mentioned above was teat-like in

shape, and about half the size of an ordinary nursing-bottle nipple ; it was composed of the outer sheath of the aorta.

FIG. 2.



The left ventricle being opened, presented a healthy appearance as far as the size of the muscular structure and its condition were concerned. There was no fatty degeneration, and no hypertrophy. The mitral valves were healthy ; the aortic were sufficient ; and the general appearance of the endocardium was healthy with the exception of a spot below the origin of two of the aortic valves, where there was a crater-like mass about the size of a dime, which with jagged edges surrounded an orifice communicating by a narrow sinus with the teat-like process before mentioned. This ulcer opened by a larger opening, probably big enough to transmit a lead-pencil, into the right auricle, just inside the attachment of the internal leaflet of the tricuspid valve. A mass of fleshy granulations, resembling in size that found in the

left ventricle, surrounded the opening here also, and that portion of it nearest the right ventricle had no doubt interfered so with the proper closure of the tricuspid valve as to give rise to the systolic murmur there heard. Otherwise the right cavities of the heart were normal in every respect. The pulmonary valves were not in the least affected, even by thickening, nor were the tricuspid valves at all diseased. No atheroma was anywhere visible. All the other organs were in perfect health.

Death from perforating ulcer of the heart is certainly of great rarity. But few cases are found on record, with an ante-mortem history so complete as to permit of, at least, a supposition of the originating cause of the occurrence. The symptoms recorded in the many reports of cases of heart-rupture, are very vague and obscure, relating as they all do simply to the rupture, not to the cause; the data that we have to base our clinical studies upon, are, the verdict of the coroner's jury and such information as can be gathered from the statements of friends.

Intrinsic diseases of the heart,<sup>1</sup> such as fatty degeneration, etc., are the usual causes of rupture, and as such pathological changes are found in persons past middle life, rupture of the heart is usually found at that age. Markham's<sup>2</sup> report of twelve cases of heart rupture, excluding those of traumatic origin, taken from the first seven volumes of the London Pathological Society's Transactions, shows us that the youngest patient was 52 years of age, the oldest 79. Seven were men, five women. In nearly all, if not in all, the coronary arteries were diseased. Quain<sup>3</sup> reports

<sup>1</sup> Schroetter. Ziemssen's Cyclopædia of Medicine, vol. vi.

<sup>2</sup> Medical Times and Gazette, 1859.

<sup>3</sup> Lancet, vol. i. 1872.

88 cases—63 in persons over sixty, 33 between sixty and seventy, and the remainder between seventy and eighty years of age. He states that in many cases no symptoms whatever were noticed antecedent to the death agony. Out of 100 cases, death occurred in one or two minutes in 71; one patient lived eight days; one six days; one three days; and five over forty-eight hours. The heart was fatty in 77 cases, and in 6 "softened." In one case there was bursting of an aneurism, and in *one* the rupture was due to an abscess. Acute disease of the endocardium or of the heart substance may lead to the same result, by the formation of an aneurism through the yielding of the endocardium at any point, in the former case, or by localized myocarditis with the formation of an abscess, in the latter. In interstitial inflammation of the heart, the pus formed, following channels, may burrow in various directions. As the foci of inflammatory action are occasionally discrete, and oft-times limited in number, they have been called cardiac abscesses.<sup>1</sup> When they ulcerate through the endocardium or begin in that tissue, they form ulcers.

Senac,<sup>2</sup> in 1749, first pointed out that ulcers or abscesses of the heart were more frequently found at the base, referring at the same time to diseases of the pericardium and neighboring organs as their immediate cause. Deitrich in 1852 made the same observation. They usually occur between the ages of 20 and 40.<sup>3</sup> According to Schroetter, "*primary* disease of the heart substance is very rare. There are only a

<sup>1</sup> See an interesting article on this subject in Hayden, Diseases of the Heart and Aorta.

<sup>2</sup> Schroetter, loc. cit.

<sup>3</sup> Ibid.

few cases described where no possible cause could be ascertained." Syphilis is stated by the same writer to be a cause. The acute fevers, especially typhus, are among the many causes that have been assigned for abscess of the heart and ulcerative endocarditis, but rheumatism, according to most authors, is the most frequent. The puerperal state has an equal tendency to this result, and the so-called metastatic abscesses are found in all active muscular organs having poor nutrition. Pyæmia is then the most prolific cause.

But ulcerative endocarditis, according to Lancereaux,<sup>1</sup> is not always an off-shoot of the rheumatic process; the high temperature, vomiting, and chills, with sudden syncope, which may disappear or may be followed by death, are really the symptoms of the concurrent pyæmia. Lancereaux believes that purulent ulcers of the endocardium may be the result of intense malarial poisoning, but that they are then never situated on the valves themselves, but occupy the heart lining at the valvular attachments, and produce death either by perforation or by pyæmia. In support of his view he quotes the observations of Winge and Heiberg, verified in one case by Virchow, where vibriones of filiform shape were found in the ulcers.

It may be interesting to glance over the cases reported that bear upon this intricate subject, and endeavor to gather what we can to complete its etiology.

As an example of secondary abscess of the heart caused by metastasis or thrombosis, may be cited the case reported by Dr. Moxon,<sup>2</sup> of a child at Guy's Hospital with suppurative periostitis, where death resulted

<sup>1</sup> De l'Endocardite végétante ulcereuse; Archives Générales, 1873.

<sup>2</sup> Medical Times and Gazette, vol. ii. 1872.

from multiple cardiac abscess. There were abscesses in the kidneys also.

Dr. Inman<sup>1</sup> reports the case of a man of 35, who had complained of "ague-shakes" for three or four hours daily, during seven or eight months. There was no malarial history. Nothing wrong could be detected with the heart or lungs. The patient's intellect seemed affected as in the early stage of typhoid fever, and he had a yellow, jaundiced complexion. The man died suddenly. After death there was found an extensive abscess at the base of the pulmonary artery, and this abscess communicated with the right ventricle behind one of the valves of the artery. Around this opening a fleshy vegetation existed about the size of a horse-bean. The lungs contained diffused and infiltrated pus. This patient's case was evidently one of primary suppuration of the gland in that vicinity, from which pus had been thrown into the venous current for some time.

The most interesting case, and the only one that I can find analogous to that which I have had the honor to report, is one given us by Heslop,<sup>2</sup> of a girl aged 18. There was no heart murmur, but the action of the organ was tumultuous and irregular. On the patient's admission to the hospital, she stated that she had had rigors, followed by flushes of heat, but never any rheumatism. She was a weak, anaemic girl, and died in convulsions. The part of the endocardium immediately beneath the semilunar valves (in the left cavity<sup>3</sup>), presented an

<sup>1</sup> *Ibid.* vol. i. 1862.

<sup>2</sup> *Medical Times and Gazette*, vol. ii. page 245, 1856.

<sup>3</sup> Hanska (*Medical Times and Gazette*, 1855) is quoted to have shown, by 300 examinations of hearts, that there was in the normal septum a spot varying in size from a bean to an almond, entirely destitute of muscular

irregular, ecchymosed surface, and had the appearance of being undermined, leading to the base of the aorta. At the attachment of the middle and anterior segment of the valves, was a mass of fibrinous deposit the size of a small walnut, surrounding a cavity containing a recently formed coagulum, pus, etc.: it did not perforate. It was noticed that two days before death a continuous blowing sound was heard, accompanying and masking both first and second sounds. The patient had vomited at the commencement of the attack, and there was epigastric tenderness; rigors set in early, and the skin was jaundiced. Death took place in all probability from pyæmia.<sup>1</sup>

Greenfield notes, for Dr. Murchison,<sup>2</sup> a man aged 56, in whom the temperature from May 7 till June 1 varied, with nightly exacerbations, from normal to 105° Fahr. The rigors occurred at irregular periods, sometimes more than once daily. The mitral valves were thickened, and the aortic slightly affected; the tricuspid valves also were thickened. There was a granulating, white mass, an eighth of an inch thick and a quarter of an inch long, on the border of one flap; the heart was the seat of fatty degeneration.

substance, the two chambers being there separated only by the layers of endocardium that line them. Examining the septum from the left, after slitting up the aorta, we may remark a thin diaphanous spot under the angle formed by the convex borders of the right and posterior semilunar valves of the aorta, being closed above by a thin musculoid bundle, coursing along the contour of the ostium arteriosum sinistrum. In the right ventricle, the deprivation of muscular substance is covered by the end of the tricuspid valve, and so thin is the duplicature of the endocardium that the lines and markings of the fingers held under it can be seen through.

<sup>1</sup> In Watson's Practice I find it stated that "a Duchess of Brunswick died of rupture of the heart. In her case an ulcer penetrated the parietes of the right ventricle, which in other respects was healthy."

<sup>2</sup> Lancet, vol. i. 1873, page 909.

Cases have been recorded where friction was suggested as a cause of endocardial ulcer, by Dr. Hodgkin, Dr. Hilton Fagge, and others. Coupland<sup>1</sup> records a case with an aneurismal pouch starting from a nodule on an aortic valve which directly faced it.

In this short *résumé* of a subject about which really so little has been written, it will be seen that ulcerative endocarditis is looked upon as *secondary* to various affections and diatheses; as a *primary* disease it must be looked upon as rare, particularly when limited to one spot, as it was in Heslop's case and in that which I have reported; in fact, in the above cases it may even be attributed to a cachexia, where a focus of inflammation started either in the connective tissue of the heart, or in the endocardium, resulting in an ulcer which, small as it was, induced pyæmia. Suppurating processes near the heart may involve it in their progress, as we have already seen; again there is no reason why metastatic infiltration or infectious embolism, may not occur and give rise to phenomena so intense as to mask the primary irritation; or thrombosis of the cardiac veins or of atheromatous coronary arteries, may be a cause, in persons advanced in years. Malaria, from pigmentous deposit or otherwise, may give rise to embolism, or, if the germ-theory be accepted, the emboli may be charged with bacteria. But notwithstanding all these varied causes assigned by authors, undoubtedly some cases exist unaccounted for, and that which I have had the honor to report stands boldly forth as an example.

In a strong, healthy woman, bearing evidence of no

<sup>1</sup> *Lancet*, vol. ii. 1875.

previous disease, with all the other organs in perfect health, a small ulcer situated in healthy tissue demands an explanation which none of the cases I have cited throw light upon. The process without doubt had been going on for some time. Could some congenital malformation, some previous strain, or the puerperal state, have laid the foundation of disease at a point where the blood current was directly and forcibly impinging; or shall we attribute the rupture to an abscess of a lymphatic gland within the heart substance? But take it as we may, it serves to prove that, as far as we know, such cases can occur spontaneously, or rather idiopathically.

Among the many points of interest in these cases, we have the temperature. A small quantity of pus, measured by the drop alone, gave rise in this case, and in others I have cited, to the most marked symptoms of pyæmia, viz., hectic, vomiting, and, in some, jaundice, chills and convulsions.

In the patient spoken of by Dr. Inman, the pyæmic symptoms had lasted many months, and the fleshy vegetation at the cardiac opening of the abscess showed that pus had been intermingling with the blood for some time. The same existed in Heslop's case, and also in mine.

The only symptom then that marks this disease is pyæmia—pyæmia coming on suddenly, and usually associated with some cardiac disturbance, or else with embolic infarction of other organs. Of course the symptoms of pyæmia are severe<sup>1</sup> in proportion to the amount of pus entering the circulation, or to the non-resisting power of the nerve centres to its poisonous

<sup>1</sup> Medical Times and Gazette, October, 1877.

action. Chance<sup>1</sup> speaks of a boy aged 13, who, apparently in perfect health but with a serofulvous diathesis, was attacked one day immediately after eating with nausea and vomiting. The next day he became drowsy, and complained of feeling very sick with pain in the stomach. Finally, complete coma set in, with rapid and fluttering pulse, and occasional convulsive movements. He died in two days from the beginning of the attack. There were multiple abscesses of the heart, with perforation and pericarditis. Here nothing was observed until perforation into the pericardium had taken place. But in all cases where ulcerative endocarditis has been found, a rise in temperature has been noticed.

Jaundice may be said to be dependent on the length of the attack; in those where pus was pouring into the circulation for some time, it was always noticed, but not otherwise.

Vomiting has always been present, both in the very acute and in the more prolonged cases, though usually it has been more frequently seen in the former, as tolerance seems to have been established in the latter cases. I would call attention to the fact that in Heslop's case there was no stupor characteristic of a typhoid state, nor septicaemia, but that the patient died in convulsions. In the case reported by me there was consciousness to the very last. Patients dying of puerperal pyæmia also exhibit this peculiarity.

As regards physical signs, there is nothing that will aid us in diagnosis until perforation takes place. If the abscesses are numerous or confluent, irregularity

<sup>1</sup> *Lancet*, vol. i. 1846.

and tumultuous action of the heart may aid us. If ulceration takes place, murmurs will be produced, differing in character and position from those of valvular lesions, unless the action of the valves should be interfered with. It may be well to state here that old valvular deposits, from rheumatism or other causes, may become caseous and break down,<sup>1</sup> causing at times pyæmia or embolic infarction in other organs (*secondary ulcerative endocarditis*). The murmurs heard in such cases would of course be limited to the valves affected. The corporeal endocarditis of acute specific fevers, such as puerperal or scarlet fever, or pyæmia, may lead to ulceration, and ulcers will then form on the papillary muscles, often eroding them.<sup>2</sup>

In Greenfield's case, there was heard at the ensiform cartilage and over the lower part of the sternum, a loud, systolic murmur which became fainter towards the left, but was replaced on that side by a rough, systolic murmur, apparently distinct and conducted to the angle of the scapula; all the valves, as we have seen, were affected more or less, and hence the mitral regurgitant murmur; the tricuspid murmur was aided by the fleshy mass spoken of. In Heslop's case there

<sup>1</sup> See case by Pepper, Transactions of the Philadelphia Pathological Society, vol. iv.

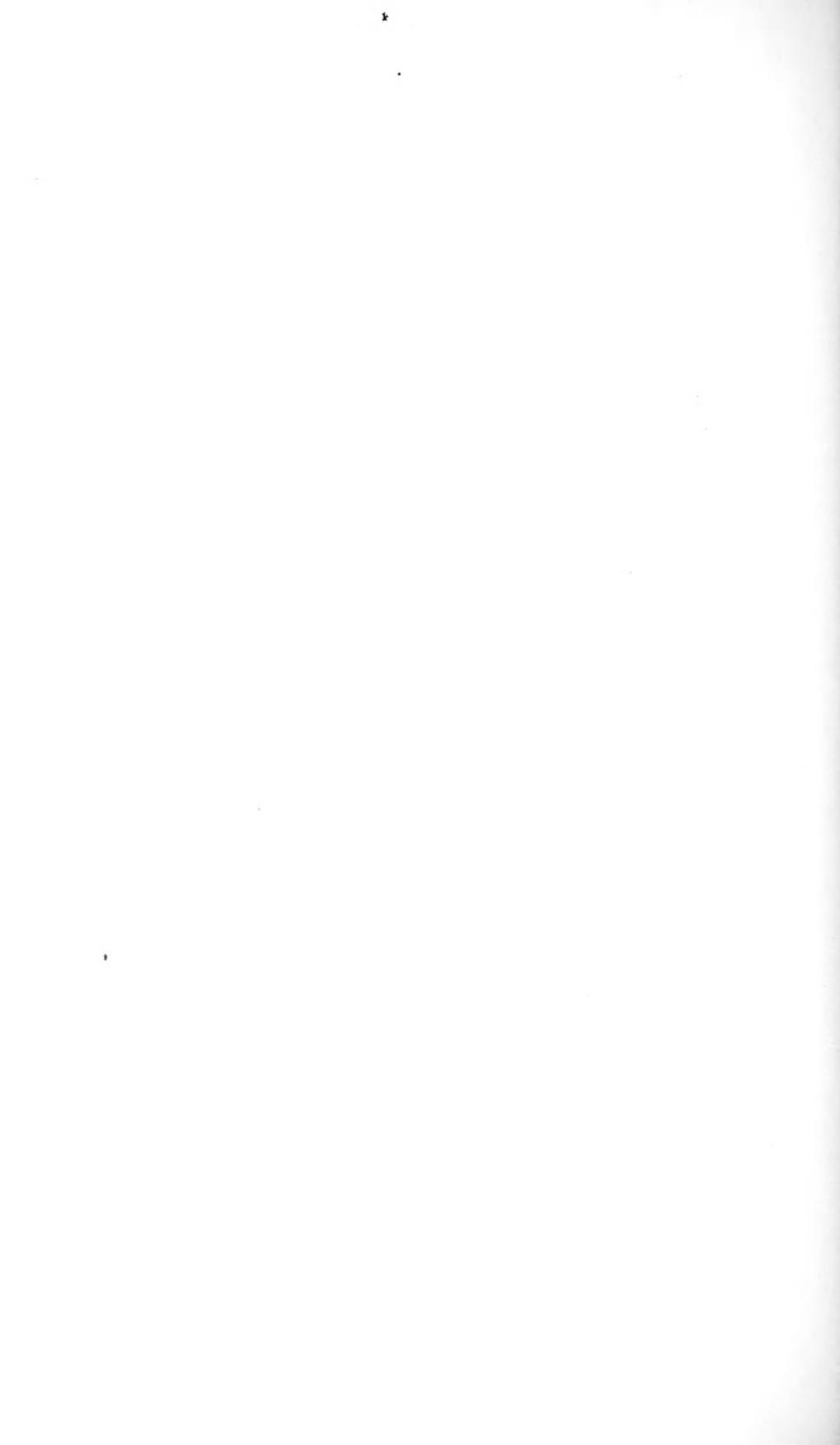
<sup>2</sup> Dr. Harrison Allen, in answer to a note from me, kindly gives me his opinion on this subject, as follows: "The researches of Schweigger-Seivel show that lymphatic vessels are in abundance beneath both pericardium and endocardium, and from these two localities freely communicate by irregular spaces in the muscular structure of the heart-wall. I presume that an analogous arrangement exists in the septum between the endocardial surfaces of the right and left hearts. The glands are outside the cardiac figure, at the base. I could not localize an abscess at the base of the ventricular septum by reason of any known disposition of lymphatic glands or vessels."

was no murmur, but the action of the heart was "tumultuous and irregular." In my case, the aortic valves showed no insufficiency, but at times there was slight systolic roughening; the tricuspid murmur was well marked, but the feeble mitral-systolic murmur was not transmitted to the back, and may have been due to the granulations changing the course of the blood current.

In conclusion, then, I think that we can safely assert that *primary* abscess of the heart, or primary ulceration, if it proceed far enough, independent of general myocarditis, is occasionally found.<sup>1</sup> I cannot offer any explanation except that it may be due to disease of the lymphatic channels or the glands. I have no doubt that many of the cases recorded as secondary ulceration, and attributed to multitudes of causes, were in reality cases of this kind occurring in persons of strumous diathesis. Can we proceed farther, if we accept this theory, and give credit to small abscesses of lymphatic origin, in the heart or arteries, in early life, for the starting point of many of those obscure cases of aneurism where the absence of atheroma is noted?

Of course little is to be said under the head of treatment. When the cases come to us they are usually beyond our aid. Cases have gotten well, and, after death from other causes, calcareous nodules have, it is said, been found imbedded in the heart muscle.

<sup>1</sup> Hayden, Diseases of the Heart and Aorta; Article on Myocarditis.



ACCIDENTAL ENTRANCE OF A CENTIPEDE INTO  
THE NOSTRIL, AND RETENTION OF  
IT FOR SEVERAL DAYS.

By

JOHN H. PACKARD, M.D.,  
SURGEON TO THE EPISCOPAL HOSPITAL, ETC.

[Read June 5, 1878.]

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ON the 8th of May, 1878, I was called to see M. B., a child six years old. Her mother told me that the child had, a short time previously, in blowing her nose, expelled a "worm," which she showed me in the pocket handkerchief, coiled up just as it had escaped from the nostril.

On inquiry I found that for several days previously the children had been allowed, when driving out in the Park, to get out and play in the freshly-cut grass, which they often amused themselves by throwing at one another. This child had been noticed, since the 4th or 5th, to blow her nose very frequently, and to rub it; but had shown no other signs of having taken cold.

The mother was naturally very much alarmed, thinking the "worm" was some strange parasite which had been developed in the child's nose. I felt free to assure her that this could not be the case, but that the animal had been in some way accidentally introduced up the nostril, and had found shelter there until its expulsion had equally accidentally occurred.

Upon submitting it to Prof. Leidy, I was very glad to find my opinion confirmed. The creature proved to be one of the Myriapoda, described by Dr. H. C. Wood in his work on the subject (Smithsonian Contributions for 1870), and called by him *Geophilus cephalicus*. It had probably been in a bunch of grass thrown into the child's face, and had sought refuge, as the most convenient place, in her nostril. It measured  $2\frac{1}{16}$  inches in length, and lived for several hours after its expulsion. During this time it was at the bottom of a small bottle full of water. Its death took place only when alcohol was added to the water for the purpose of preserving it.

I need perhaps hardly add that the irritation of the nose ceased at once upon the escape of the centipede.

The circumstance seems to me sufficiently unusual to warrant placing it upon record.

REPORT  
OF THE  
COMMITTEE ON METEOROLOGY AND EPIDEMICS  
FOR THE YEAR 1877,

INCLUDING A NOTICE OF THE INCREASING FREQUENCY OF  
DEATHS FROM CANCER.

By  
RICHARD A. CLEEMANN, M.D.

[Read September 4, 1878.]

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THE data, upon which the meteorological part of the Report which I have the honor of offering to the College this evening is founded, were obtained from the U. S. Signal Service station in this city, under charge of Observer F. M. M. Beall. In the preparation of the portion relating to epidemics, I have had access, through the kindness of the Registrar, Geo. E. Chambers, Esq., to the records of the office of the Board of Health of the city.

#### METEOROLOGY.

*Temperature.*—The year 1877 was, for our climate, mild and equable in temperature.

The annual thermometric mean, calculated from those of the several months, is  $54.2^{\circ}$  F. (Table A), a little more than two degrees above the average for the last six years,  $52.1^{\circ}$  F. (Table B). January, following upon the exceptionally cold December of 1876,

TABLE A.—METEOROLOGICAL ELEMENTS OF THE CLIMATE AT PHILADELPHIA FOR 1877.

Furnished by F. M. M. BEAUL, Observer, Signal Service, U. S. A.

Date.	Barometer.			Thermometer.			Wind.			No. of auroras.																			
	Means of observations		Range.	Means of observations		Range.	Number of miles.		Amount of rain and melted snow.																				
	Mean	A. M. of observations	Highest.	Lowest.	Difference.	Maxim.	Minim.	Prevailing direction.	W. N. E. of Philadelphia.																				
Jan.	30.163	30.175	30.151	30.647	29.213	1.404	28.4	21.9	31.1	27.7	49	8	41	76	W.	2037	1689	1416	1765	34	6907	2.62	11	None.					
Feb.	30.081	30.101	30.067	30.092	30.565	29.402	1.163	36.9	32.2	41.0	35.2	60	16	44	64	W.	2269	1821	1822	1950	44	7507	0.84	6	44				
March.	30.001	30.024	29.977	30.004	30.582	29.120	1.462	38.2	34.8	42.4	36.6	67	15	52	68	N. W.	3017	2887	2560	2741	44	11325	3.40	13	44				
April.	29.985	30.011	29.941	29.980	30.403	29.419	0.984	50.0	46.2	56.4	47.4	80	30	50	60	E.	2479	1958	1845	2345	43	8627	2.66	9	44				
May,	29.907	30.024	29.968	30.014	30.350	29.470	0.929	60.7	57.4	67.1	58.0	90	41	49	54	N.	2177	1777	1721	1972	32	7449	1.10	9	Two.				
June,	29.997	30.028	29.959	29.978	30.293	29.611	0.682	71.7	68.3	77.8	68.8	93	54	39	67	W.	2112	1618	1345	1586	34	6661	5.22	10	None.				
July,	29.953	29.974	29.921	29.956	30.294	29.703	0.651	77.8	51.3	73.1	95	61	34	70	W.	1930	1352	1175	1781	28	6241	5.53	13	44					
Aug.	29.954	29.981	29.924	29.956	30.323	29.680	0.334	75.5	72.1	81.0	73.5	93	63	30	69	W.	1957	1359	1181	1558	26	6059	0.66	8	44				
Sept.	30.077	30.103	30.048	30.085	30.328	29.718	0.610	66.8	62.9	72.6	64.6	84	48	36	70	S. W.	1902	1443	1278	1568	33	6191	2.74	8	44				
Oct.	30.062	30.091	30.023	30.052	30.192	29.391	1.141	57.4	53.5	63.0	53.9	79	41	38	74	S. W.	2270	1785	1453	1863	60	7371	6.52	11	44				
Nov.	30.127	30.155	30.107	30.126	30.618	29.334	1.304	46.6	43.5	55.0	45.5	68	22	46	72	N. W.	2332	2015	2041	2493	60	8857	5.14	11	One.				
Dec.	30.179	30.214	30.162	30.175	30.630	29.342	1.285	40.6	36.2	44.4	39.3	63	22	41	73	N. E.	2313	1739	1754	2160	38	7963	0.83	4	None.				
Total,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26,817	21,518	19,398	23,828	...	91,501	37.26	113	Three.
Ann. mean	{ 30.018	30.073	30.020	30.051	30.456	29.451	1.05	51.2	50.4	59.4	52.0	76.7	35.1	41.6	68.1	W.	....	....	....	....	....	39.8	...	3.15	9.4				

falls, with its mean temperature of  $28.4^{\circ}$  F., somewhat below its average of coldness ( $31.2^{\circ}$  F.), but February rises five degrees above its mean, marking  $36.9^{\circ}$  F. All the other months but May and June were warmer than usual, and of these exceptions the former's average temperature equals its six years' mean,  $60.7^{\circ}$  F., while the latter's is less than half a degree below its figure for that period,  $72.1^{\circ}$  F. The excess of heat was, however, not great in the warmer months; the widest deviation from the normal temperature being in April (the monthly mean of which is  $50^{\circ}$  F. against the six years' average of  $47.3^{\circ}$  F.), and, in the last three months of the year, October recording  $57.4^{\circ}$  F., November  $46.6^{\circ}$  F., and December  $40.6^{\circ}$  F., advances for these several months beyond their averages of  $2.4^{\circ}$ ,  $4.5^{\circ}$ ,  $6.7^{\circ}$  respectively.

The highest point reached by the thermometer during the year was  $95^{\circ}$  F., in July, and the lowest  $8^{\circ}$  F., in January, making a range for the whole year through  $87^{\circ}$  F. The differences between the extremes of temperature in the several months were greatest in those of the spring, and least, as is usual, in those of the summer and early fall; the latter were indeed more equable in temperature than common, as were also the winter months, the ranges of January and February being each  $9^{\circ}$  F. less than their average variations for six years; during the whole of the former month the surface of the Schuylkill River remained frozen over. The order of the individual months, with regard to their extent of range, is: March  $52^{\circ}$  F., April  $50^{\circ}$  F., May  $49^{\circ}$  F., November  $46^{\circ}$  F., February  $44^{\circ}$  F., January and December each  $41^{\circ}$  F., June  $39^{\circ}$  F., October  $38^{\circ}$  F., September  $36^{\circ}$  F.,

TABLE B.—COMPARISON OF METEOROLOGICAL ELEMENTS OF THE CLIMATE AT PHILADELPHIA, FOR THE YEARS 1872, 1873, 1874, 1875, 1876, AND 1877, WITH MEANS.

Month	Meteorological elements.		1872.	1873.	1874.	1875.	1876.	1877.	Mean of 6 years.
	Therm.	Mean.							
January	Therm.	Mean.	29.4	28.9	36.7	26.1	37.7	28.4	31.2
		Range.	43.0	60.0	55.5	49.5	52.0	41.0	50.2
	Mean barometer.	30.053	30.113	30.193	30.231	30.161	30.063	30.136	
		.....	.....	70.7	71.0	70.0	76.0	71.9	
	Mean humidity.	.....	.....	.....	.....	.....	.....	.....	
		Rainfall.	.95	5.84	4.53	2.83	1.52	2.62	3.05
February	Therm.	Mean.	31.2	29.8	33.2	26.1	34.0	36.9	31.9
		Range.	45.0	50.0	64.0	58.0	56.0	44.0	53.0
	Mean barometer.	30.011	30.016	30.174	30.131	30.131	30.084	30.091	
		.....	.....	67.7	66.0	69.0	64.0	66.7	
	Mean humidity.	.....	.....	.....	.....	.....	.....	.....	
		Rainfall.	1.12	4.75	2.46	3.20	5.03	0.84	2.90
March	Therm.	Mean.	32.1	39.1	40.0	34.9	37.4	38.2	36.9
		Range.	52.0	53.0	48.0	49.0	57.0	52.0	52.0
	Mean barometer.	30.054	30.001	30.022	30.104	30.040	30.001	30.037	
		.....	.....	64.0	69.0	68.0	68.0	67.0	
	Mean humidity.	.....	.....	.....	.....	.....	.....	.....	
		Rainfall.	3.67	2.04	2.16	3.10	6.71	3.40	3.51
April	Therm.	Mean.	51.6	45.3	42.5	45.5	49.1	50.0	47.3
		Range.	54.0	35.0	46.5	51.0	44.0	50.0	46.7
	Mean barometer.	30.063	29.947	30.055	29.978	30.004	29.983	30.005	
		.....	47.5	72.2	59.0	53.0	60.0	58.3	
	Mean humidity.	.....	.....	.....	.....	.....	.....	.....	
		Rainfall.	2.60	3.51	9.76	2.85	2.16	2.66	3.92
May	Therm.	Mean.	61.5	59.6	59.9	61.4	60.9	60.7	60.7
		Range.	43.0	45.0	51.0	49.0	47.0	49.0	47.0
	Mean barometer.	29.975	30.009	29.982	29.993	30.064	29.997	30.003	
		.....	60.3	57.7	54.0	62.0	54.0	57.6	
	Mean humidity.	.....	.....	.....	.....	.....	.....	.....	
		Rainfall.	2.15	5.83	2.75	1.36	4.45	1.10	2.94
June	Therm.	Mean.	72.7	70.6	73.0	70.5	74.2	71.7	72.1
		Range.	36.0	43.0	46.0	44.0	41.0	39.0	41.5
	Mean barometer.	29.976	29.996	29.990	30.034	29.999	29.997	29.999	
		.....	63.0	64.1	65.0	65.0	67.0	64.8	
	Mean humidity.	.....	.....	.....	.....	.....	.....	.....	
		Rainfall.	4.29	0.90	3.02	4.13	2.29	5.22	2.97
July	Therm.	Mean.	78.6	76.4	74.7	74.6	78.6	77.8	76.8
		Range.	28.0	33.0	31.0	31.0	40.0	34.0	33.0
	Mean barometer.	39.970	30.023	30.030	29.996	29.993	29.953	29.994	
		.....	62.7	64.1	66.0	63.0	70.0	65.1	
	Mean humidity.	.....	.....	.....	.....	.....	.....	.....	
		Rainfall.	9.20	5.00	2.25	3.63	5.71	5.53	5.22

TABLE B—*continued.*

Month.	Meteorological elements.		1872.	1873.	1874.	1875.	1876.	1877.	Mean of 6 years.
	Therm. meter.	Mean. Range.							
August.	Mean barometer.	75.9 34.0	72.3 33.0	71.1 40.0	72.4 27.0	74.3 35.0	75.5 30.0	73.6 33.2	
	Mean humidity.	30.045 .....	30.065 75.4	30.030 61.3	30.035 76.0	30.061 69.0	29.954 69.0	30.032 70.1	
	Rainfall.	7.81	11.49	5.65	6.42	0.98	0.66	5.50	
	Therm. meter.	67.5 40.0	66.1 43.0	68.0 36.0	64.1 45.0	63.8 42.0	66.8 36.0	66.0 40.0	
	Mean barometer.	30.049	30.096	30.100	30.035	29.984	30.077		30.057
	Mean humidity.	.....	70.6	71.6	65.0	71.0	70.0		69.6
September.	Rainfall.	3.66	3.58	6.01	2.53	8.77	2.74	4.55	
	Therm. meter.	52.9 38.0	54.7 43.5	55.5 42.0	53.7 39.0	54.8 44.0	57.4 38.0	55.0 40.7	
	Mean barometer.	30.105	30.073	30.115	30.015	30.020	30.062		30.065
	Mean humidity.	.....	63.4	65.0	65.0	65.0	74.0		66.5
	Rainfall.	5.20	5.20	2.87	1.42	1.06	6.52		3.71
	Therm. meter.	41.2 42.0	38.3 35.0	41.8 45.0	39.7 54.0	45.0 54.0	46.6 46.0	42.1 46.0	
October.	Mean barometer.	30.099	29.992	30.200	30.107	29.969	30.127		30.082
	Mean humidity.	.....	63.9	61.0	68.0	71.0	72.0		67.2
	Rainfall.	3.40	5.10	2.32	5.40	7.31	5.14	4.78	
	Therm. meter.	28.9 46.0	38.3 50.5	35.7 46.0	34.7 61.0	25.5 45.0	40.6 41.0	33.9 48.2	
	Mean barometer.	30.160	30.165	30.176	30.042	30.027	30.179		30.125
	Mean humidity.	.....	69.9	67.0	76.0	73.0	73.0		71.8
November.	Rainfall.	2.74	1.38	2.48	3.37	1.40	0.83	2.03	
	Mean thermometer.	51.8	51.4	52.6	50.3	52.6	54.2	52.1	
	Mean barometer.	30.047	30.041	30.089	30.059	30.037	30.048		30.053
	Mean humidity.	.....	.....	65.0	67.0	66.0	68.1	66.5	
	Rainfall.	46.79	54.62	46.31	40.24	47.39	37.26	45.43	
	No. of days on which rain fell.	.....	160	136	154	131	113	139	
The whole year.	Prevailing winds.	N. W.	S. W.	S. W.	S. W.	W.	W.	S. W.	

July 34° F., and August 30° F. The first autumnal frost was observed on the 23d of October, and ice appeared on the 12th of November.

*Pressure.*—The mean reading of the barometer for the year, 30.048 inches, is only .005 inch below the average for six years. The mean pressure of the several months is January 30.163 inches, February 30.084 inches, March 30.001 inches, April 29.983 inches, May 29.997 inches, June 29.997 inches, July 29.953 inches, August 29.954 inches, September 30.077 inches, October 30.062 inches, November (exceptionally high) 30.127 inches, December 30.179 inches. Thus, the pressure was greatest in the winter, next highest in degree in the fall, then in the spring, and least in the summer. The range of the mercury for the whole year was from 30.647 inches, recorded in January, to 29.120 inches, observed in March, a difference of 1.527 ineh. The pressure was very steady in the summer, varying only .682 inch, and also during September, the range for this month being but .610 inch. In March, on the other hand, the difference between the highest and lowest points equals 1.462 inch, while the winter and also the later fall months showed comparatively great variations in range.

*Rainfall.*—Only 37.26 inches of rain and melted snow are recorded for 1877, a considerably less amount than the average rainfall for six years, 45.43 inches, while the number of wet days falls below the mean of 139 to the figures 113. But one heavy snow storm, that of January 1, occurred during the year. The lightness of rainfall belonged to all the seasons except the fall, in which the later months, especially October, were more wet than usual. The months individually

varied a good deal from their respective averages in precipitation. February in the winter had a fall of but .84 inch, against 2.9 inches, and May in the spring only 1.1 inch against 2.94 inches; in the summer June recorded an excess of rain, 5.22 inches, against 2.97 inches, while August, usually the most rainy month, became again, as in the previous year, the least so, having a fall of but .66 inch; in the autumn September marked only 2.74 inches against 4.55 inches, but October more than compensated for the deficiency, recording 6.52 inches (2.74 inches of which fell in a single day, the 4th) against the average 3.71 inches. December descended very much below its mean 2.03 inches, having a rainfall of but .83 inch.

*Humidity.*—Notwithstanding the light rainfall of 1877, the mean humidity of the atmosphere, calculated for the year, is 68.1° (saturation being considered 100°), 1.7° above the average for four years. Of the months, February, May, and August only were less damp than usual. January, though distinguished by an uncommon number of clear days, marks 76° for its average humidity, rising 4° above its mean. The snow which fell so heavily on the first day of this month remained upon the ground for a long time, and, exposed to the sunshine, was the source of a great deal of this watery vapor. Besides January, the months especially responsible for the high annual mean of humidity are July, October, and November.

*Winds.*—The prevailing direction of the wind during the year was, as usual, westerly. Easterly winds were, however, predominant in April, withal a dry month, while in December the wind blew chiefly from the northeast. Severe wind storms character-

ized March, by far the most blustering month of the year; and in October there occurred a destructive cyclone, the heavy rainfall accompanying which has been already alluded to.

*Electricity.*—Lightning was observed on March 21, April 12, 28, 29, and May 12, 20, 22, and very frequently during the summer, as follows: June 5, 6, 14, 19, 21, 26, July 1, 3, 5, 9, 18, 19, 20, 27, 28, 29, 30, August 12, 15, 16, 29, 31, also on September 7, and on October 10, 21. Auroras were seen on May 2, 28, and on November 2.

An *eclipse* of the *moon* was visible here August 23. On September 10 a slight non-destructive *earthquake* was observed, the shock of which lasted 30 seconds.

#### EPIDEMICS.

There was a gratifying falling off in the death-rate of Philadelphia for 1877, since the number of interments, excluding those of children dying after premature birth and of the stillborn, was but sixteen thousand and four (16,004), less by two thousand eight hundred and eighty-eight (2888) than in the year before, a reduction of somewhat more than fifteen per cent. (Table C.)

Estimating the population of the city at the middle of the year to have been 860,000, the ratio of mortality for 1877 is 18.6 deaths per thousand of inhabitants, a value 4.3 per thousand inhabitants less than the ratio for the previous year, and 3 per thousand inhabitants below the average for ten years, 1866-1875. This is the lowest death-rate to be found in the records of Philadelphia during the last eighteen years,

the period in which the registration is sufficiently accurate to be depended upon, being less than that of 1867 and that of 1874, exceptionally healthy years. It even rivals the ten years' mean of certain of the more healthy rural districts of England.

A word here with regard to the density of population in Philadelphia will not be amiss, since the degree of crowding together of people has a recognized influence upon the general salubrity. It has sometimes been stated that Philadelphia contains 5225 inhabitants to the square mile; this result being obtained quite legitimately by dividing the 129 square miles of the "consolidated" city into the number of the population according to the census of 1870. But this method of calculation, without explanation, is a vicious one; for more than nine-tenths of the territory held within the official limits of the city is open country, with but occasional villages or hamlets strung along, or dotted here and there; to include which in the general calculation must evidently give a wrong impression. Excluding this space, which contains the 21st Ward (Manayunk), the 22d (Germantown), the 23d (Frankford), the 25th, the 28th, parts of the 26th and of the 29th, and to which I will add the 24th and 27th (West Philadelphia), all these divisions together absorbing about 200,000 of the inhabitants of the municipal census of 1876 (Table D, *last two columns*), there remains a closely built plot of ground ten square miles in extent, stretching along the river Delaware and westward to the Schuylkill River, in which dwell 600,000 people. It is, therefore, nearer the truth to consider the mean density of the population of Philadelphia to be 60,000 to the square mile, or 95 to the

TABLE C.—COMPARISON OF CLASSIFIED LISTS OF CAUSES OF DEATH IN PHILADELPHIA DURING 1872, 1873, 1874, 1875, 1876, AND 1877.

Class.	Order.	Causes of death.	1872.	1873.	1874.	1875.	1876.	1877.
		All causes . . .	18987	15224	15011	17805	18892	16004
		Specified causes . . .	18846	15087	14962	17752	18823	15982
I.		Zymotic diseases . . .	6299	3134	3005	4590	4777	3689
II.		Constitutional diseases . . .	3848	3616	3680	3880	4205	3924
III.		Local diseases . . .	6187	5859	6009	6893	7298	6115
IV.		Developmental diseases . . .	1935	1898	1662	1741	1943	1702
V.		Violent deaths . . .	577	580	606	648	600	552
		<i>Causes not specified</i> . . .	141	137	49	53	69	22
			18987	15224	15011	17805	18892	16004
I.	1	Miasmatic diseases . . .	6175	3033	2903	4472	4638	3595
	2	Enthetic diseases . . .	24	33	40	24	34	43
	3	Dietic diseases . . .	90	57	52	78	87	51
	4	Parasitic diseases . . .	10	11	10	16	18	0
II.	1	Diathetic diseases . . .	622	533	469	578	518	539
	2	Tubercular diseases . . .	3226	3083	3211	3302	3687	3385
III.	1	Dis. of the nervous system . . .	2597	2370	2364	2619	2972	2277
	2	" organs of circulation . . .	776	715	771	835	869	829
	3	" respiratory organs . . .	1651	1546	1688	1927	1927	1569
	4	" digestive organs . . .	838	922	907	1023	1056	976
	5	" urinary organs . . .	242	237	273	367	370	346
	6	" generative organs . . .	35	34	60	57	65	63
	7	" organs of locomotion . . .	40	31	20	24	24	38
	8	" integumentary syst. . .	8	4	26	41	15	17
IV.	1	Develop. dis. of children . . .	126	124	162	156	154	150
	2	" " adults . . .	38	45	41	34	37	40
	3	" " old people . . .	648	513	433	492	599	619
	4	Diseases of nutrition . . .	1123	1216	1026	1059	1153	893
V.	1	Accident and negligence . . .	513	521	528	553	518	476
	3	Homicide . . .	17	14	19	27	22	17
	4	Suicide . . .	47	45	59	68	60	59
		<i>Causes not specified</i> . . .	141	137	49	53	69	22
			18987	15224	15011	17805	18892	16004
I.	1	Smallpox . . .	2580	39	16	56	407	155
		Measles . . .	140	29	117	12	53	69
		Scarlatina . . .	168	309	352	1032	328	379
		Diphtheria . . .	141	106	181	656	708	458
		Croup . . .	284	188	196	429	386	338
		Whooping-cough . . .	155	95	74	125	88	81
		Typhoid fever . . .	341	358	468	400	774	542
		Typhus fever . . .	35	31	26	21	27	15
		Erysipelas . . .	76	89	83	87	84	77
		Puerperal fever . . .	22	28	65	80	54	50
		Dysentery . . .	75	73	49	78	78	79
		Diarrhea . . .	179	163	141	151	149	123
		Cholera infantum . . .	1603	1068	859	992	1173	979
		Cholera morbus . . .	111	67	51	47	35	43
		Malarial fevers . . .	55	30	51	48	47	40
		Rheumatism . . .	31	45	37	53	53	37
		Cerebro-spinal meningitis . . .	125	238	80	83	85	56
		Other miasmatic diseases . . .	54	77	57	122	109	74

<sup>1</sup> Includes four militiamen killed in the State service at Pittsburg.

TABLE C—*continued.*

Class	Order.	Causes of death.	1872.	1873.	1874.	1875.	1876.	1877.
II.	2	Enthetic diseases . . .	24	33	40	24	34	43
	3	Dietic diseases . . .	90	57	52	78	87	51
	4	Parasitic diseases . . .	10	11	10	16	18	0
	1	Cancer . . .	334	261	306	319	302	327
III.		Other diathetic disease . . .	280	272	163	259	216	212
	2	Tabes mesenterica . . .	779	679	721	766	811	786
		Phthisis pulmonalis . . .	2248	2228	2277	2359	2676	2411
		Other tubercular diseases . . .	199	176	213	177	200	188
IV.	1	Cephalitis . . .	956	874	747	935	1023	724
		Apoplexy . . .	260	269	232	260	279	199
		Paralysis . . .	236	233	249	287	305	309
		Convulsions . . .	732	670	675	811	894	703
V.		Sunstroke . . .	135	16	17	20	130	8
		Other dis. of nervous system . . .	278	308	344	306	341	334
	2	Pericarditis . . .	45	49	87	87	106	87
		Aneurism . . .	9	21	18	23	20	27
VI.		Heart diseases . . .	644	582	626	670	701	676
		Other dis. organs of circulat'n . . .	78	63	40	55	42	39
	3	Bronchitis . . .	214	206	256	342	354	307
		Pleurisy . . .	50	65	82	104	73	70
VII.		Pneumonia . . .	1252	1132	1133	1277	1306	1063
		Other dis. of respirat'y organs . . .	135	143	217	204	194	129
	4	Enteritis . . .	306	337	336	399	431	356
		Peritonitis . . .	131	181	119	159	130	143
VIII.		Intestine diseases . . .	133	111	120	150	133	133
		Stomach diseases . . .	6	23	37	29	32	27
		Liver diseases . . .	227	257	227	219	271	247
		Other dis. of digestive organs . . .	35	13	68	67	59	70
IX.	5	Nephritis . . .	17	19	24	47	35	30
		Bright's disease . . .	36	29	131	195	263	204
		Other dis. of urinary organs . . .	189	189	118	125	72	112
	6	Diseases of ovaries . . .	6	8	16	13	8	14
X.		Uterus diseases . . .	29	26	44	44	57	49
	7	Caries and necrosis . . .	31	22	10	12	13	25
		Joint diseases . . .	9	8	10	12	11	13
	8	Dis. of integumentary system . . .	8	4	26	41	15	17
XI.	1	Malformations . . .	88	90	123	120	126	120
		Teething . . .	38	34	39	36	28	30
	2	Childbirth . . .	10	15	16	10	8	12
		Puerperal convulsions . . .	28	27	23	24	23	28
XII.		Other develop. dis. of adults . . .	0	3	2	0	6	0
	3	Old age . . .	648	513	433	492	599	619
	4	Debility . . .	822	921	712	695	681	530
		Inanition . . .	301	295	314	364	472	363
XIII.	1	Drowning . . .	99	112	129	119	111	127
		Otherwise . . .	414	409	399	434	407	349
	3	Homicide . . .	17	14	19	27	22	17
	4	Suicide . . .	47	45	59	68	60	59
XIV.		Causes not specified . . .	141	137	49	53	69	22
			18987	15224	15011	17805	18892	16004

<sup>1</sup> Deaths from "premature birth" are included.

NOTE.—In the table the number of deaths from "premature births" and of the "still-born" have been omitted. They were recorded as follows:—

	1872.	1873.	1874.	1875.	1876.	1877.
Premature births . . .	...	...	229	280	244	261
Still-born . . .	825	885	891	824	896	930

acre, a degree of concentration which places it in the rank of the more thickly populated cities.

The deaths of males, in number 8138, exceeded, as is the rule in Philadelphia, those of females, recorded as 7866. Of the whole mortality, 24.5 per cent. occurred within the first year of life; 7.5 per cent. between the first and second years; 8 per cent. between the second and fifth years; 5 per cent. between the fifth and fifteenth; 13.4 per cent. between the fifteenth and thirtieth; 24 per cent. between the thirtieth and sixtieth; and beyond the sixtieth year 17 per cent. These figures echo, notwithstanding the general heathfulness of the year, the old story of excessive infantile mortality.

An examination of a list of the deaths, classified according to their causes (Table C), shows the mortality to be divided among the several classes in the following proportions: Zymotic diseases 23 per cent., constitutional diseases 24.5 per cent., local diseases 33 per cent., developmental diseases 10.6 per cent., and violent deaths 3.4 per cent. In the previous year the ratios of the several classes, in the same sequence, had been 25, 22, 39, 10, and 3 per cent. respectively, so that in 1877 there was a relative decrease of deaths in the "zymotic" and "local" classes. When the actual values in the several classes in each year are compared, there is found a falling off in every one of them in 1877: The zymotic diseases decrease 23 per cent., the constitutional 7, the local 16, the developmental 11, and the violent deaths 8 per cent. Analyzing now the decrease in the zymotic class, it appears that the deaths were less in every important one of the special diseases but scarlatina, which numbered

a slight excess of victims. Yet the quota of several are still high. The record gives smallpox only 155, but scarlatina 379, diphtheria 458, croup 338, typhoid fever 542, and cholera infantum 979.

The 155 deaths from *smallpox* declined from the number 407 in the previous year; they all occurred in the first eight months of the year, with only 7 noted after May (Table D). Half of the whole number were returned from the group of the 17th, 18th, 19th, 31st, and 25th Wards, where the disease was most prevalent at the close of the year 1876; a locality to which I have referred in my previous reports as being an especial lair of smallpox. The other deaths were scattered through the city without marked aggregation, but they were fewer in the central and western wards than in the southern, the latter thus maintaining in some degree their bad reputation of greater susceptibility to variola. The freedom of the last four months of the year, as regards deaths from this revolting disease, it is delightful to chronicle, but it should not be looked upon with too much complacency, since it is to be feared that with the foe invisible, we shall be less alive to his future coming. How near the disease always is to us, constantly requiring our most active opposition, may be appreciated in looking back to its career since the great epidemic of 1871-72. By the summer of the latter year the monthly mortality had fallen to an insignificant figure, and thus continued for twelve months, when zero was reached (summer of 1873). Then followed an exemption of deaths, lasting six months, after which, in the spring and summer of 1874, a few deaths from the malady were reported, and one in the fall. This

TABLE D.—DISTRIBUTION OF THE ZYMOTIC DISEASES SMALLPOX, SCARLATINA, DIPHTHERIA, CROUP, AND TYPHOID FEVER, AMONG THE SEVERAL WARDS OF PHILADELPHIA IN 1877, DURING EACH MONTH AND FOR THE YEAR.

Number of ward	Number of deaths											
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1st	2	3	6	3	2	1	3	1	3	1	3	1
2d	2	1	1	3	2	1	2	1	1	1	1	1
3d	2	1	1	2	2	1	2	1	2	1	1	1
4th	1	1	2	1	1	1	2	1	2	1	1	1
5th		2	1	1	1	1	2	1	2	1	1	1
6th		1	1	1	1	1	2	1	2	1	1	1
7th		3	2	1	5	1	2	3	1	2	1	1
8th		2	1	2	1	2	1	2	1	2	1	1
9th		2	1	2	1	2	1	2	1	2	1	1
10th		1	1	2	1	2	1	2	1	2	1	1
11th		1	1	2	1	2	1	2	1	2	1	1
12th		1	1	2	2	1	3	1	3	1	2	1
13th		2	1	2	2	1	3	1	3	1	2	1
14th		2	1	5	2	1	2	3	1	3	1	1
15th	1	3	5	2	1	1	2	3	1	3	1	1
16th	1	1	2	1	1	1	1	1	1	1	1	1
17th	3	2	2	2	1	2	1	1	1	2	1	1
18th	5	1	3	5	2	2	6	1	3	2	4	1
19th	9	1	2	3	4	2	1	4	3	2	1	1
20th	1	2	2	4	1	4	1	2	1	3	1	1
21st		1	2	2	2	2	1	2	1	2	1	1
22d		1	4	2	2	1	1	1	1	2	1	1
23d		1	5	1	3	2	1	1	2	1	2	1
24th		3	1	2	2	1	2	1	1	1	2	1
25th	2	1	3	2	2	1	1	2	2	1	1	1
26th	1	1	2	1	1	1	1	1	2	1	1	1
27th		5	1	2	2	1	1	1	2	1	1	1
28th	4	1	4	3	2	1	3	1	4	2	1	1
29th		2	1	5	1	4	1	2	1	3	1	1
30th		3	2	1	6	1	5	1	2	1	1	1
31st	2	4	1	2	6	1	5	1	2	1	1	1
Total	36	27	52	44	74	20	17	31	21	24	32	30
	14	34	29	12	41	6	46	27	10	60	139	28
	13	18	23	28	34	16	34	46	18	39	14	58

TABLE D—*continu*ment.

was but a small skirmish with the enemy. The immunity from deaths which followed did not last long, however, since a few fatal cases were reported in the February of 1875, and in each succeeding month till December, when the respectable number of 21 deaths for that month was obtained. After this each month during 1876 furnished its quota, which was a little less in the summer, till by the end of December the rather large number for the year of 407 deaths had been reached. The disease was again declining, however, and the mortality once more disappeared, as we have seen above, in the summer of last year. But the latter invasion of variola was a much more formidable demonstration than that of 1874, and who can tell whether when the last respite is over, the next coming of the enemy will not prove a fierce assault? False security is, then, not to be indulged in, but the precious boon of vaccination to be used as earnestly and thoroughly as if the destroyer were slaying hecatombs about us.

The increase in the deaths from *scarlatina*, already mentioned, reaches 50; this appears a small excess perhaps, but it has a significance beyond its numerical value, when the fact is recalled that scarlatina was declining in Philadelphia at the close of the previous year. If we compare the mortality of the latter halves of the two years we shall find that while this period in 1876 furnished but 76 deaths, the corresponding time in 1877 gave 230, of which 60 were recorded for December, so that the end of the latter year was markedly showing the effects of a new inroad of the disease, which it was to be expected would increase in extent in 1878.

In the distribution through the city of the deaths from scarlatina (Table D), the southeastern wards do not show their usual excess, though the northeastern, the 18th, 31st, and 25th have their usual prominence. On the other hand, among those districts giving a ratio beyond the average for the whole city, is the old "city proper," which is not common. In the towns of Germantown (22d Ward) and Frankford (23d Ward), in both of which the disease was especially prevalent in 1875, but few deaths from it occurred last year, only two being recorded for the former place; and in Manayunk (21st Ward), where the mortality from scarlatina had been much increased in 1876, the decline in deaths last year was from 49 to 4. The ward most heavily smitten by the epidemic in 1877 was the 25th, in which is situated the village of Bridesburg; here the deaths reached 15 per ten thousand inhabitants, while the ratio for the whole city reads but 4.4.

In attempting in my report for 1875 to explain the differences in the aggregation of the deaths from scarlatina in the various parts of the city, I accepted, in the strictly urban portion, want of cleanliness and low social grade as among the causes of increased mortality in certain districts; now we have in 1877 the phenomenon of a greater proportionate number of deaths in a better kept and socially higher quarter of the city in seeming disproof of such interpretation. But it is to be observed that the actual numbers in the latter district are small compared with those returned from the former in 1875; and it may well be surmised that the stock of persons susceptible to the poison in the less favored wards was more quickly

exhausted than in those better placed, leaving fewer to be stricken there in 1877.

In the report for 1875, a year in which the deaths from scarlatina numbered above a thousand, I laid some stress on the good effects, as regarded the limitation of the disease, to be looked for from isolation of the patient and disinfection of his surroundings; therefore, I need say nothing more on those subjects here; yet I wish to present an incident which lately fell under my notice that illustrates the deplorable results which may attend a disregard of the infective powers of the poison. A young girl suffering from scarlatina was received into the house of a relative and lodged in the garret; it was in the month of July, and this room was stored with the heavy bed quilts which the warmth of the season had temporarily banished from use. The case was a mild one, the patient soon recovering. In the November following I was called again to the dwelling to treat two sick children, both of whom I found to be also attacked with scarlatina, one of them, a boy of six years, so severely that he evidently had but a few hours to live. They were lying in a lower story of the house, but before they were taken sick some bed coverings had been brought down from the room which the young girl had occupied in the summer, and spread upon their bed, to guard them from the increasing cold of the autumn nights. No point is strained in connecting these two cases of the fever with a contagion lurking in the quilt.

*Diphtheria*, though it decreased in mortality more than one-third from its rate in 1876, was yet responsible, as we have seen, for 458 deaths; falling off but

slowly, as I ventured to predict in my last report. The decrease was quite generally distributed through the city, the chief exceptions being that the richer quarter, the "city proper," with some adjoining territory, showed a slight excess, a fact parallel with one to which I have called attention above, in speaking of scarlatina. In the 21st Ward (Manayunk), however, where it will be remembered the disease was especially severe during the two years previous, the decline in mortality was very marked, the numbers 72 and 39 of those years being now replaced by 7. This experience also has a counterpart in certain features of the course of scarlatina, its behavior in Germantown and Frankford, already cited. The frequent intercourse between the inhabitants of small towns, a condition by which I attempted to explain, in an earlier report, the greater severity of epidemics in such places, may be now invoked to account for their more abrupt decline there; evidently the stock of the susceptible is more quickly exhausted, just as it is in filthy localities, where the dirt proves such an efficient poison bearer.

In summing up the mortality of diphtheria by the quarters of the year, it comes out that the last quarter furnishes the most deaths, 157 to 120 in the first. Notwithstanding then its general decline, the disease was again, like scarlatina, making a fresh start at the close of the year, giving an ominous outlook for 1878.

The deaths from *croup* were 12 per cent. less than in the previous year. The greatest falling off was in the 21st Ward (Manayunk), from a mortality of 23 to 2. I have alluded above to the very considerable diminution of the deaths from both scarlatina and

diphtheria in this same locality. The 23d Ward (Frankford) also had a much lessened mortality, side by side with the diminution in the number of deaths from diphtheria, while the 13th, 14th, 15th, and 28th Wards also declined in this special death-rate more than the general average of its decrease. On the other hand, as with scarlatina and diphtheria in the "city proper," there was an excess of deaths from croup over those of the previous year in that district. The mortality also increased very much proportionately in the 18th Ward, the 22d (Germantown), and the 28th; in the last, where only one death was reported from the disease in 1876, there were 7 noted in 1877.

The general tendency of croup at the close of the year was towards an increase of mortality, the first quarter having given but 93 deaths, while the last gave 146. This parallelism in behavior with the last two mentioned zymotics, keeps before us the close relationship of the conditions which give rise to these several manifestations of disease.

In 1876, as my last report declared, the special feature in the mortuary list was the increased mortality from *typhoid fever*. Last year the deaths from this cause fell off 30 per cent. Their actual number, 542, is still, however, considerably above the average (386) computed for a period of ten years (1866-1875). The mortality (Table E) was less than that of 1876 in each of the wards except the 3d (which had not shared the increase of the previous year, and now only reached its ten years' average), the 7th, the 12th, and some of those municipal divisions which are suburban, namely, the 21st (Manayunk), the 23d (Frankford),

the 25th (Bridesburg), and the 28th. In general, it may be said there was a decided tendency on the part of the several wards to approximate in their mortality their ten years' averages. This is what was to be expected if the chief cause of the epidemic in the previous year was, as I supposed, of the nature of an exceptional meteorological condition, like the unusually long-continued high temperature of 1876.

TABLE E.—RATIOS PER TEN THOUSAND INHABITANTS LIVING, OF THE DEATHS FROM TYPHOID FEVER IN THE SEVERAL WARDS OF PHILADELPHIA DURING 1876 AND 1877, WITH THOSE OF THE AVERAGE MORTALITY FROM THIS CAUSE DURING A PERIOD OF TEN YEARS (1866–1875).

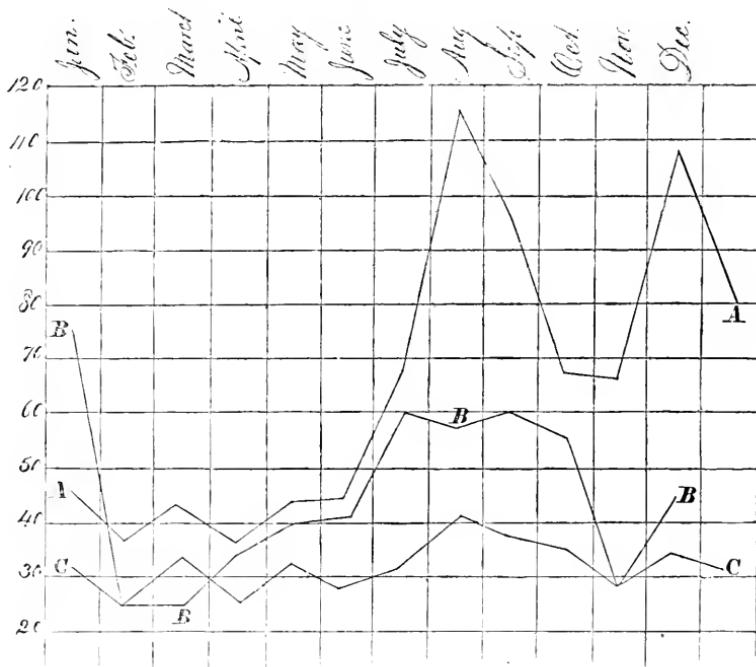
No. of ward.	Ratio per 10,000 inhabitants.			Ratio per 10,000 inhabitants.			Ratio per 10,000 inhabitants.				
	1876. 1877. 1866–1875			1876. 1877. 1866–1875			1876. 1877. 1866–1875				
	No. of ward.			No. of ward.			No. of ward.				
1st	8.0	7.0	5.0	13th	6.5	6.0	4.2	25th	6.0	8.0	4.4
2d	8.9	7.5	4.7	14th	12.0	6.0	4.6	26th	8.0	4.0	3.8
3d	4.0	5.0	4.8	15th	9.5	5.4	4.5	27th	7.0	7.0	6.0
4th	7.0	6.0	6.0	16th	9.5	5.0	6.4	28th	5.0	9.5	5.3
5th	7.4	3.0	4.9	17th	9.4	6.0	6.6	29th	18.5	10.0	
6th	7.5	3.0	5.5	18th	13.5	8.7	8.0	30th	7.5	5.0	
7th	8.0	9.0	5.7	19th	12.3	11.5	9.4	31st	11.4	11.0	
8th	9.0	5.0	4.0	20th	11.0	8.0	11.0				
9th	9.0	4.0	3.8	21st	4.4	7.0	4.4	The whole city.			
10th	10.0	5.0	4.0	22d	6.0	5.7	3.0		9.3	6.3	5.7
11th	10.0	4.0	5.3	23d	8.0	9.0	3.6				
12th	8.0	8.0	5.2	24th	9.7	3.0	4.6				

The "periodical distribution" of the deaths from typhoid fever through the whole city in 1877, is represented in the accompanying figure by a curve (*B*), along with one (*A*) expressing the same thing for 1876, and another (*C*) drawn from the average monthly mortality from the disease during a period of ten years (1866–1875). The curve *B* presents remarkable

coincidences with that of the averages, similar to those I pointed out last year for that of 1876 with the same curve; and the accord would be even more striking if the peaks in the line for 1877 told the exact truth. It happens, however, that the monthly values for this curve are taken from a mortuary list

FIG. 1.

Curves representing the monthly mortality of typhoid fever during 1876 and 1877, and the average monthly mortality of the same for ten years (1866-1875).



A. Mortality curve for 1876. B. Curve for 1877. C. Curve of averages.

which has been condensed from weekly reports, a method which involves the allotment of four weeks to some months and five to others. The same plan

was followed in computing the terms for the curve of averages, but here, in the number of years taken, the effect of the inequality in the assumed length of the months is neutralized. In the special case of last year the month of July is represented by five weeks, the period from July 1 to August 4, during which time 60 deaths from typhoid fever were reported, 13 of which fell to the last week, while to August is given but four weeks, from August 5 to September 1, in which period 58 deaths were noted. It is quite evident from this showing that the greater number of deaths were returned in the month of August really, so that the higher peak should correspond with this month, which would bring the curve in accord as regards the maximum point attained with the others. The curve for 1876 was not made up in this faulty manner, but from the daily record of the deaths, so that each month received its true quota.

There appears in the line for 1877 (*B*) a very rapid descent for February, when the lowest point passes much below the curve of 1876 for that month, to coincide with the minimum of that of the averages; the curve *B* keeps then below the latter till the warmer weather is established, when a rise is made considerably above it. Bearing now in mind that the December of 1876 and the January of 1877 were very much colder than the corresponding months a year previous, it is easy to believe, following the dictum of Murchison quoted in my last report, that the great fall in the mortality in February, and the delay in the subsequent rise from March to April, were due to the *protracted* cold of those two winter months. Why the maximum of the curve of 1877 is not de-

picted at August, as are the highest points of the other lines, I have truly explained, as I believe, above. The minimum, which follows, is found at November, as in the other curves, and is as low as that of the averages. The general excess of deaths in 1877 over the mean may perhaps be accounted for, as in the previous year, by the temperature of the spring and summer being rather higher than usual, but as the difference was not very great, another interpretation will seem more probable to one who holds the germ theory of this disease, namely, that the germs produced so abundantly in 1876 left an unusual number of descendants behind, to spring into active existence when the conditions became favorable.

*Cholera infantum* was credited last year with a mortality of 17 per cent. below that for 1876; yet, as many as 979 infants succumbed to the disease. Accepting the pernicious influence of high temperature, we would not be prepared to find this reduction if we formed our opinion from a comparison merely of the mean monthly thermometric readings of the corresponding summer months, since these do not vary very much. To comprehend it we must study the height of the mercury day by day, or even morning and night, for it is the *continued* intensity of the heat, as we could demonstrate last year by a fine example, which is so baneful in increasing the death-rate from this affection.

I have now discussed the mortality due to epidemics, and though we have seen above that the class of diseases to which they belong diminished much more proportionately in its death-rate than the others

from their numbers in the previous year; yet, if we compute the actual value of the reduction in this class, we shall find it but a little more than one-third of the whole decrease of the mortality in 1877. The other two-thirds belong among the other classes. A tenth of the whole reduction is credited to the *constitutional diseases*, and is the result chiefly of a falling off in the number of deaths from *phthisis pulmonalis*, though the mortality from this cause was still somewhat beyond the average. The difference, in spite of the greater humidity of the atmosphere, coincides with the other more favorable meteorological conditions of 1877, the absence of intense cold and excessive heat, and a lessened rainfall. The approach to equableness of temperature is expressed but faintly in the diminished monthly range marked in the thermometric readings of Table B; and the same is true with reference to the other climatic elements. The record of the daily range is, as I have hinted in speaking of cholera infantum, necessary to appreciate fully the relations of this quality.

The class in which the greatest reduction of mortality is observed is that of *local diseases*, the one which furnishes the largest contingent to the whole mortuary list. Here it is not difficult to trace the benign influence of the meteorological conditions, keeping down the death-rate of the diseases of the *nervous system* in the summer, and of affections of the *respiratory organs* in the colder months. In the class of *developmental diseases* there was a diminution of more than 250 deaths from the special causes of *debility* and *inanition*, conditions eminently influenced by extremes of temperature.

Thus, in reviewing together the mortality of the two years, 1876 and 1877, we must be deeply impressed with the great weight of meteorological conditions in determining the death-rate; and, as a consequence, must recognize the great importance of guarding against the pernicious effects of these by the wearing of suitable clothing at all times, and by the judicious use of fires in winter and of bathing in summer. These are measures, the mention of which may be trite enough, but it is possible they may be lost sight of in the greater prominence given of late years to other agencies, valuable in the preservation of health, such as drainage, sewerage, and ventilation.

An exception to the almost general decrease of mortality among the several nosological orders in 1877, is found in the case of *diathetic diseases*, under which heading are recorded 539 deaths against 518 in the previous year. The excess is due to the registration of 25 more deaths under *cancer*, the whole number reported from this cause being 327. There is, however, no special significance in this increase for a single year, since in going back over the records for several years I came upon instances where in a twelve-month an equal decrease was observed, but it recalls to me a question which I have heard asked, "Is not cancer increasing among us?" The answer must prove interesting, and, with a view of throwing some light upon it, I have appealed to the bills of mortality accumulated through many years in the office of the City Registrar. Though these records were but indifferently kept till the Act of Legislature for the "Registration of Births, Marriages, and Deaths," which was approved March 8, 1860,

went into effect, many deaths, no doubt, escaping registration, yet it is likely that the special death-rate from cancer was not diminished thereby any more proportionately than the general mortality. So it has been assumed that the comparison of the ratio of the deaths from cancer to the whole number of deaths reported for each year will furnish us at least approximatively true results for our purpose. But for the later years, when the statistics became sufficiently reliable, I have also made use of the ratio of the deaths from the special disease to the living population.

Going back seventy years, from 1876 to 1807, I have tabulated (Table F) for that period 6279 deaths from cancer in a mortality from all causes of 564,518; including under the heading "cancer," 216 deaths registered as from scirrhous, 96 recorded as from fungus haematoles, and 30 which were distributed under other names. The whole number of years has been divided into groups of five, an arrangement which possesses several advantages, as, for instance, giving us larger values to deal with, which is desirable in calculating ratios; serving to eliminate in some degree the disturbing effects of meteorological and epidemic influences on the general mortality of single years, and securing brevity. The sex and the age of those who died from cancer are given, their actual number, the total mortality from all diseases, and the ratio of the deaths from cancer to this; also, for the later years, the ratio of the special disease to living population.

The Table (F) gives 4.5 per thousand as the proportion of the deaths from cancer to the mortality

from all causes in the first period of five years (1807-1811), and in the last lustre (1872-1876) the ratio 16.4; hence, according to these figures, there has been an increase during sixty-five years in the proportion of the special death-rate to that from all causes, of nearly 400 per cent. The increment, however, does not appear to have been evenly acquired, for while during the first twenty-five years the variation does not reach 25 per cent., it leaps forward in the next five years nearly 40 per cent.; then, for a period of twenty-five years, the ratio is less augmented, though in one contained lustre (1842-1846) an advance of more than 30 per cent. is made, to be lost again in those subsequent; then there is another great step of 40 per cent. in the next five years; once more a pause, or indeed a slight decline for a lustre, followed by a rise for the last ten years of 28 per cent.

This astonishing result is in great measure confirmed when we appeal to calculations made with the ratio of the deaths from cancer to the population of the city; a more reliable method evidently, than the one employed above, because we get rid of the influences which disturb the value of the general mortality. By this means we learn that in the period from 1862 to 1866 there was a yearly average of 3.14 deaths per ten thousand of the population living, while in that from 1872 to 1876 the ratio was 3.92 per ten thousand, making an advance for the later years of 25 per cent.

The objection may be made to accepting the increase of cancer as a fact, that the greater precision of modern diagnosis has brought under the head of cancer many cases which would formerly have been

TABLE F.—THE NUMBER OF DEATHS REPORTED FROM CANCER IN THE MORTUARY LISTS OF PHILADELPHIA DURING 70 YEARS (1807–1876).

The age and the sex of each person dying from this cause; the mortality from all causes; the ratio of the deaths from cancer to the general mortality; also for each of the last fifteen years, the respective population of the city, and the ratio of the deaths from cancer thereto.

Period.	Sex.	Age.										Total deaths from cancer.	Mortality deaths from all causes per 100 of total mortality.	Ratio of deaths from cancer to general mortality.		
		Male.	Female.	1	2	5	10	15	20	30	40	50	60	70	80	90
<u>From 1807-1811</u>																
44	1812-1816	....	....	1	1	2	5	10	15	20	30	40	50	60	70	80
44	1817-1821	....	....	1	1	2	5	10	15	20	30	40	50	60	70	80
44	1822-1826	....	....	1	1	2	5	10	15	20	30	40	50	60	70	80
44	1827-1831	....	....	1	1	2	5	10	15	20	30	40	50	60	70	80
44	1832-1836	58	150	2	6	8	2	4	13	37	51	39	25	12	7	4
44	1837-1841	61	173	3	2	6	3	2	18	37	48	53	32	23	7	4
44	1842-1846	83	191	3	3	5	3	1	3	13	37	67	54	55	22	9
44	1847-1851	100	240	1	1	1	1	2	19	46	72	83	58	36	13	4
44	1852-1856	127	267	3	1	3	3	1	2	22	65	80	98	88	40	9
44	1857-1861	207	508	6	8	19	3	6	6	30	105	158	151	137	60	9
44	1862	39	124	4	2	3	2	2	5	16	35	51	41	19	6	4
44	1863	63	138	1	1	2	1	1	1	6	29	48	51	29	16	5
44	1864	49	132	1	1	1	1	1	1	7	24	33	31	39	19	4
44	1865	65	136	1	1	1	1	1	1	7	20	44	45	42	24	5
44	1866	56	149	1	1	1	1	1	1	1	9	36	42	51	34	5
44	1867	60	150	1	1	1	1	1	1	1	8	18	36	53	40	16
44	1868	76	161	1	1	1	1	1	1	1	10	31	56	62	45	26
44	1869	65	167	1	1	1	1	1	1	1	10	31	47	59	56	22
44	1870	78	184	1	1	2	1	1	1	1	10	33	48	67	55	35
44	1871	85	197	1	1	3	1	1	1	11	37	59	64	33	7	2
44	1872	108	208	1	1	1	1	2	1	8	50	72	76	63	35	8
44	1873	77	191	1	1	2	1	1	1	6	37	51	62	44	29	9
44	1874	93	215	2	1	3	1	1	1	5	34	53	81	75	43	6
44	1875	100	218	1	1	1	1	1	1	14	42	70	83	70	29	6
44	1876	104	203	2	1	1	1	1	1	12	27	68	75	79	32	6
Total .....	174	4132	21	26	70	25	35	37	279	550	1356	1300	1254	628	170	15
															6279	6279
															564,318	564,318
															11.1	11.1

classed as tumors, ulcerations, strictures, or simply diseases of various organs.

In answer to this supposed criticism, to which I was at first inclined to allow a great deal of force, I offer a Table (G), recording the deaths assigned to tumor during the same period as that covered by the table for cancer, and of like construction to the latter; having chosen the caption "tumor" because it is the term which seems to me most likely to cause confusion in the records of cancer.

From the Table (G) it will be seen, however, that the number of deaths attributed to tumor, relative to the mortality for all causes, has not decreased as it should have done were more morbid growths recognized in later years as cancer, but that on the contrary the value of the proportion has been augmenting, like that of cancer. It is worth noting, however, in this connection, that if the two tables were consolidated the march forward of the combined values in the successive periods would be more uniform than is that of either alone; and it may be added that, for the later years at least, the reported increase in the deaths from cancer has been at a more rapid rate than has any change of pathological views.

Analyzing the cancer table with reference to the distribution of the deaths between the sexes, only a little variation in this respect is seen to have been wrought in the long period; but this little is constant, and tends to diminish the preponderance on the side of the females. For instance, between the years 1832-1861, 71 per cent. of the deaths fell among the latter, while between 1862-1876 the proportion fell

TABLE G.—THE NUMBER OF DEATHS REPORTED FROM TUMOR IN THE MORTUARY LISTS OF PHILADELPHIA  
DURING 70 YEARS (1807-1876).

The age and sex of each person dying from this cause; the mortality from all causes; and the ratios of the deaths from "tumor" to the general mortality.

Period.	Sex.	Age.												Mortality from all causes.	Ratio of deaths from tumor per 1000 total mortality.
		Under 1 Year	1 to 2	2 to 5	5 to 10	10 to 15	15 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80		
	Female.	Male.													
From 1807-1821	..	..	..	2	1	..	1	4	2	1	2	1	2	..	.5
" 1822-1826	..	..	..	..	..	1	..	4	2	3	..	..	..	16	.8
" 1827-1831	..	..	..	..	..	1	..	1	4	6	5	..	2	..	.8
" 1832-1836	2	1	..	..	..	..	..	..	..	1	..	1	..	..	1.5
" 1837-1841	3	2	1	..	..	..	..	..	..	..	..	..	..	..	.1
" 1842-1846	6	10	1	..	..	..	..	..	..	..	..	..	..	..	.2
" 1847-1851	10	12	2	..	..	..	..	..	..	..	..	..	..	..	.2
" 1852-1856	8	27	2	1	..	..	..	..	..	..	..	..	..	..	.1
" 1857-1861	22	50	2	3	2	1	..	..	..	..	..	..	..	..	.27
" 1862-1866	24	79	1	1	2	3	2	..	..	..	..	..	..	..	.2
" 1867-1871	49	116	4	4	6	9	..	..	..	..	..	..	..	..	.2
" 1872-1876	49	121	5	1	6	1	2	1	..	..	..	..	..	..	.9
Total,	173	418	18	10	21	13	5	23	77	79	133	110	110	43	1.16

to 70 per cent., and between 1872 and 1876 reached only 68 per cent.

In regard to age, the figures would show that cancer in the earlier years of life was more common formerly, but the numbers are not large enough to give weight to this result. The vast majority of the cases are seen to have always occurred in persons between the 40th and 70th years of life, and the greatest number in those between the 50th and 60th. Were the tables relating to cancer and tumor consolidated as above suggested, the distribution of the deaths among the young would not vary so much in the different periods.

The rise in the number of deaths reported from cancer is not confined to the mortality records of Philadelphia. In looking over the lists of deaths in London for thirty years (1845-1874), I have found that the mortality from this cause has advanced from 3.4 per thousand inhabitants to 5.7 in that period, or 70 per cent. Comparing the respective mortality from cancer in the two cities during the year 1862, and again during 1874, I found that the deaths in London during the earlier year were 1333 in a population of 2,860,117 souls, or in the ratio of 4.7 per ten thousand inhabitants, in the later year 1929 in a population of 3,400,701, or 5.7 per ten thousand. In Philadelphia the ratios were 3.1 and 4.0 respectively in the same years. So that in latter times the number of deaths reported from cancer has been increasing in both cities in large proportions; at a less rate in the British metropolis than among ourselves, but the disease carries off relatively a larger proportion of the inhabitants of London.

These statistics paint for us an awful picture of the future ravages of cancer, if we assume that the disease will continue augmenting the number of its victims at the present rate. But we have seen that the advance has been irregular and halting, and we may hope that the halt will be some time prolonged, or perhaps even a retreat take place; else would not the disease, well known in the far-off days of Hippocrates, before this time have exterminated the race?

Nevertheless, the origin of cancer is so obscure, and the special conditions favoring its growth so little known, that we can with certainty predict nothing of the future. The well-established fact of the influence of inheritance in determining the expression of the disease, will lead the cautious physician to disapprove of marriages between members of families known to be tainted with the evil, while the occasional connection between sources of chronic irritation and its development, will make him sound the note of warning against these; meanwhile we are incited to study the horrible malady with redoubled zeal.



## CASE OF RAPID POST-MORTEM EMPHYSEMA.

By

WILLIAM G. PORTER, M.D.,

SURGEON TO THE PHILADELPHIA HOSPITAL, SURGEON TO THE PRESBYTERIAN  
HOSPITAL, ETC.

[Read November 6, 1878.]

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I WAS called on the morning of the fourth of October, 1878, about 5 o'clock, to see E. H., white, a native of England, 58 years of age, married, out of business, of stout build, of temperate habits but a large eater, and residing, as he had done for many years, in Rodman St., between Lombard and South, and between 12th and 13th Sts., in the Seventh Ward of this city. He had always, as far as known, been healthy. I had been his family physician for a number of years, but had never been called before to prescribe for him.

On reaching the house, the patient's wife informed me that he had been complaining for several days, principally of nausea and vomiting, but that he had not considered himself sufficiently sick to consult a physician. I found him with a cold surface and depressed pulse, and suffering from the most exerueiating pain, which was referred to the epigastric region. The pain was so violent as to prevent him from lying down, and caused him to shriek with agony, so that most of his immediate neighbors came to the house to inquire the cause of the disturbance and to offer assistance. On questioning him, the patient said that he had never had such

an attack of pain before, that he did not know of any cause to which to attribute it, and that he had not been out of the city during the entire summer, with the exception of an excursion for a day to Atlantic City, and a trip to Haddington, a suburb of West Philadelphia, during the early part of the week. He had been out during the early part of the evening, had retired to bed, and had been awakened by the pain which had steadily gone on from bad to worse, until he was compelled to send for me. Morphia was administered hypodermically, and brandy by the mouth; hot mustard foot-baths were used, and counter-irritation by mustard plasters and the essential oil of mustard, followed by the application of flannels wrung out of hot water. A grain of morphia in divided doses had been administered hypodermically, and four hours had passed away, before the patient was sufficiently relieved to allow me to leave him.

At the end of an hour I saw him again, and found him relieved of his pain. He then had very decided fever, the degree of which unfortunately was not tested by the thermometer; he had slept a little, and had taken a little brandy and milk, which had been retained. Five grains of calomel were then given, and a mixture containing quinia was ordered to be taken every two hours. Beef essence, brandy, and milk, were also ordered. At three o'clock I found the fever still very decided; there was no jaundice and no suffusion of the eyes; the tongue was moist, but of a peculiar blackish color in the centre, and red on the tip and edges. The bowels had not been moved, and there had been no vomiting. The patient had passed about a pint of dark porter-colored urine. I then administered a large enema of warm Castile soap-suds, a portion of which was passed entirely unchanged.

I visited the patient again about eight o'clock in the evening; he still had fever, but not so decidedly as at the previous visits. He had passed several large, soft, biliary evacuations, had not had any return of pain, expressed himself as feeling much better, had slept considerably, and had taken his beef essence, brandy, and milk; he had passed no

urine. At 12 o'clock I was called to see him again, and found him suffering considerable pain, which was still referred to the epigastric region; his surface was warm, but not particularly feverish, and no pulsation could be detected in either radial artery. A hypodermic injection of morphia was given, and brandy freely administered both by the mouth and subcutaneously. No reaction occurred, and death ensued shortly after one o'clock on the morning of the fifth of October. I remained at the house for some time awaiting the arrival of his daughters, who were not present at the time of the patient's death. An undertaker was immediately sent for, and the body was placed in ice in less than two hours from the time of the fatal issue.

At 8 o'clock in the morning, the undertaker called on me and informed me that the body had swollen so enormously that he was afraid it would burst. About 9 A. M., accompanied by Dr. Morris Longstreth, I visited the house, and found that the body had swollen so much as to raise the lid of the ice-box several inches, although the corpse had been freely covered with ice. Permission was readily obtained to make a post-mortem examination, when, on removing the ice, the whole body was found to be intensely jaundiced and enormously swollen. The features were so much distended as to be unrecognizable, and the face was covered with clotted blood, which had been forced out from the bloated mouth and nostrils.

On making the usual post-mortem incision in the median line of the body, air without appreciable odor escaped from the cellular tissue; the tissues receded from the knife as if they had been stretched to the utmost; a large quantity of air, also without odor, escaped from the peritoneal cavity; and the over-distended bowels ballooned through the incision over the abdomen. The genitalia were enormously distended with air. There was no evidence of peritonitis.

The *liver* was of normal size and natural color, but exceedingly friable, permitting the finger to be easily thrust in all directions through its substance; on section with a clean

knife, blood and globules of oil escaped. The gall bladder was full of normal bile; there were no gall stones, and there was no distension of the duct. The liver was emphysematous and floated high on water. The *spleen* was of normal size, also emphysematous and friable, and presented the same appearances on section as the liver. The *bowels* were very considerably distended with air, and on being punctured previous to sewing up the body, the gas which escaped was almost if not entirely inodorous. The *kidneys* were easily removed without the aid of the knife, leaving the capsules *in situ*; they were also emphysematous, and presented the same appearances on section as the liver. The *stomach* was also distended with air, and contained a considerable quantity of broken-down and disorganized blood. The *heart* was absolutely empty, containing neither blood nor clots of any description; its tissue was softened, emphysematous, floating high on water, and presenting the same appearances on section as the liver.

On puncturing the distended lips, eyelids, and serotum, large quantities of air, entirely inodorous, escaped, and the distended parts collapsed.

After a somewhat extensive search in works on pathological anatomy, I have failed to find the record of a case in any way similar to this. The bodies of fat and flabby persons, in warm weather, frequently putrefy very rapidly: Taylor's Medical Jurisprudence, edited by Reese, says:—

“Putrefaction takes place with variable rapidity. It commonly shows itself about the second or third day in warm weather. In some instances, however, the body has been found in an advanced state of putrefaction in the short period of sixteen hours after death, and in others the process has been greatly protracted. The time of its appearance is dependent on the duration of cadaveric rigidity and the condition of the body at the time of death. The process is found

to go on most favorably in a temperature varying from 70 to 100 degrees. It will commence, other circumstances concurring, at any temperature above 50°, but at 32° it appears to be wholly arrested. The dead body may thus be preserved a considerable time in snow, ice, or a frozen soil, but, if after removal it is exposed to a temperature between 70 and 100 degrees, the ordinary putrefactive changes are stated to take place with more than usual rapidity."

The body in this case was in the hands of a careful and experienced undertaker in less than two hours from the time of death, was thoroughly surrounded with ice, and yet, in less than eight hours from the time of death, it was necessary to open the body to prevent it from bursting. Another curious feature of this case was the absence of odor in the gas, whether that contained in the cellular tissue or that in the peritoneal cavity, while even that in the bowels was scarcely if at all offensive.



## AN ENDEMIC OF TYPHOID FEVER FROM DEFECTIVE DRAINAGE.

By

WILLIAM V. KEATING, M.D.,  
PHYSICIAN TO ST. JOSEPH'S HOSPITAL.

[Read December 4, 1878.]

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IN the painful episode which I am about to narrate to the College, there is a sad history of a bright home dismantled and desolated: a middle-aged lady, in the prime of life and usefulness, the centre of devoted and loving friends, suddenly cut off; a young girl in the bloom of youth and beauty, with everything to attach her to life, consigned to an early grave; two other young girls, in the dawn of life, shattered in health and spirits, living only to brood over the ruin around them. Whether this dreadful catastrophe is one of those inscrutable decrees of the Almighty, to which we must humbly bow, or whether it be due to the ignorance, recklessness, or avarice of man, is the all-important object which brings me here to-night. I come to take counsel with you, my brethren, who with me have undertaken the great mission of watching over the well-being of our fellow creatures. I come in no spirit of vindictiveness, but as an act of justice to the memory of the sacred dead: a sense of duty to the blighted and shipwrecked survivors. Under the severe mental and physical strain which I have endured for the last six weeks, there may be short-

comings in my narration, but I do most solemnly declare that the sincere desire to seek the truth, and the truth only, has actuated me in my arduous task.

On Tuesday, the 17th of September, I was summoned to 2216 Spruce Street, to see Mrs. F., who had arrived the previous evening at 9 P. M., from Renovo,<sup>1</sup> situated on the Philadelphia and Erie Railroad. Mrs. F. had enjoyed her usual health in her country residence until Saturday, September 14, when she was seized with a chill about 5 P. M., followed by fever and perspiration. On Sunday, the 15th instant, somewhat earlier in the day, she had another chill, also followed by fever and perspiration. On Monday, September 16, whilst in the cars on her way home, there was another chill, followed by fever and perspiration. In the intervals she felt quite well and had no fever. I visited her on Tuesday, September 17, at 11 A. M. I found her languid and prostrated from her previous paroxysm of fever and the long journey of the day before. She had then no fever. As she had lived in early life in a malarious district and had often suffered from various forms of malarial poisoning, for which I had prescribed for her, and even in the last spring had treated her for a distinct malarial headache, there was no doubt in my mind nor in hers, that she was suffering from a

<sup>1</sup> Mr. Spencer Meade, of the Pennsylvania Railroad Co., has with the greatest care examined thoroughly the hotel at Renovo, and its surroundings. The system of drainage is an excellent one, the fall being 50 feet into a swift river. The following note sent me by Mr. Meade will be of the greatest importance in this connection:—

[Copy.]

RENOVO, PA., Nov. 26, 1878.

S. MEADE, Esq.,

DEAR SIR: In reply to your inquiry in regard to Typhoid Fever at Renovo Hotel, I must say, to the best of my knowledge and belief, that there *never* was a case of that kind in the Hotel. I came to this place before the house was completed, and am in position to know.

Yours respectfully,

(Signed) Wm. E. HALL, M.D.

quotidian. As the anticipated hour at which the daily paroxysm occurred was fast approaching, I ordered an immediate administration of twenty grains of sulphate of quinia. A delay occurred in procuring the medicine, and, although it was taken at 1 P. M., at 2 P. M. there was a slight chill, followed by much less fever and perspiration. According to my instructions, a slight purgative of Hunyadi water was taken at 5 A. M. on Wednesday, followed after its action, at 8 A. M., by twenty grains of sulphate of quinia and a quarter of a grain of sulphate of morphia.

On Wednesday she missed her paroxysm of fever; I found her very cheerful, tongue cleaned by the laxative, pulse and temperature normal. Thursday, September 19, 10 A. M., seems quite convalescent, no chill nor fever; continuing sulphate of quinia in diminishing doses.

Friday, 20, 10 A. M. Passed a less comfortable night, complains of slight headache, and is not as cheerful as on previous occasions. Friday, 8 P. M. Tongue slightly furred; no fever; pulse weaker. Ordered some stimulant and bromide of potassium to calm her restlessness.

Saturday, 21, 11 A. M. Had a slight chill in the night about 2 A. M., followed by fever and violent pain in the head and back. Passed a very restless night, and at times slightly wandering. Pulse now 116; temp.  $103^{\circ}$ ; tongue moist, creamy fur in the centre, red at tip and edges; bowels normal; mind torpid, inclined to drowsiness, but moaning all the time from the violent pain in the head and back; spinal column exceedingly sensitive to pressure; shooting pains in the limbs, with excessive cutaneous hyperæsthesia. The pain in the head was located in the occipital region, and, from the manner in which the head was buried in the pillow, I noticed a slight inclination to opisthotonus; no tenderness in iliac regions.

From this period until Wednesday, September 25, the disease gradually developed itself. There were the usual typical fluctuations of morning and evening temperature, and fever. There was no marked tenderness, and the bowels

remained normal. At this period the tongue was more furred, inclining to dryness in the centre, and showing at the tip a distinct wedge of reddish surface, free from coat. On Friday, September 27, I discovered a few rose-colored, lenticular spots over the abdomen; slight epistaxis, some tenderness over the right iliae region, slight looseness of the bowels, and constant tendency to delirium; pulse 120; temperature 104°. She kept her hand constantly over the region of the bladder and complained of incessant desire to micturate, attended with great pain. Urine found, by testing it, to be exceedingly alkaline, and had a strong ammoniacal odor. On September 28 there were some signs of pulmonary congestion, which was soon relieved by turpentine stupes.

September 29. Great pain in micturition, with a constant dribbling of highly alkaline urine; suspecting a retention, I drew off by a catheter about a pint of highly ammoniacal urine, with no traces of albumen. From the 29th of September, there was a general amendment of all the symptoms, and the morning and evening temperature fluctuated between 101° and 102 $\frac{1}{2}$ °, with an occasional diarrhoea, always fecal in character and easily controlled, until Saturday, October 5, when the pulse fell to 86, temperature 100°, stools normal, and intellect perfect; the patient was inclined to interest herself about the affairs of her house. My son, Dr. John M. Keating, who had visited her with me in the commencement of her sickness, but who had left the city on September 25, saw her again on Sunday, October 6, and considered her fully convalescent. The only unfavorable symptom remaining was the constant pain in micturition. On Sunday, October 6, at my usual visit, the nurse showed me some of the urine passed, and I found a considerable quantity of blood mixed with it. On Monday, October 7, I found that there had been considerable haematuria in the night, and that for eight hours the patient had suffered from a constant dribbling of urine. Suspecting retention, and that the constant micturition was from overflow, I introduced a catheter, broke up some clots, and immediately drew

off a pint and a half of bloody urine, highly ammoniacal. The haematuria was immediately controlled by the tincture of iron.

Tuesday, October 8. Everything favorable, save the pain in micturition: pulse, temperature, and bowels normal. I examined the meatus and discovered a partial eversion of the mucous membrane of the urethra, highly injected, and resembling a vascular caruncle. I at once cauterized it with nitric acid. This gave immediate relief, and all pain in micturition ceased from that moment.

Wednesday, October 9. Visited Mrs. F. at 11 A. M. She had passed a very restless night, and had had a violent rigor about 2 P. M. Pulse 120, and weak; temperature  $105^{\circ}$ ; tongue dry and tremulous; patient indisposed to answer questions, but, when roused, complaining of an extraordinary feeling in the back of the head, as if a foreign body were pressing upon the cerebellum: also of great prostration. She was perfectly conscious; no tenderness over the abdomen; condition of bowels normal; had vomited her nourishment twice in the night. I was extremely surprised, as there had been no error in diet, and no imprudence of any kind, the patient being under the constant surveillance of two devoted and experienced nurses. Wednesday, 9 P. M. Pulse 124; temperature  $105\frac{2}{3}^{\circ}$ . Patient has had slight diarrhoea, and partial delirium, but can always be made conscious; tongue very dry and tremulous; complains of the constant micturition, urine remaining alkaline and highly ammoniacal, but there being no longer pain in passing it. Her greatest suffering seems to be from this one symptom, as she is constantly annoyed by the desire, and screams for the bed-pan, the use of which I had endeavored to avoid by placing under her a large sponge covered with oiled silk.

Thursday, 10 A. M. Pulse 124, feeble; temperature  $104\frac{1}{3}^{\circ}$ ; considerable meteorism, partial delirium, with intervals of perfect consciousness; diarrhoea easily controlled. Thursday, 9 P. M. Condition same; pulse 130; temperature  $105^{\circ}$ ; quite conscious; constant micturition. Made another examination

of meatus; found it of a deep mahogany color, quite patulous, with a diphtheritic exudation extending up the urethra into the vagina. Great tenderness, with a distinct swelling and enlargement of the urethral canal. On several occasions passed the catheter, so as to be certain of no retention; urine still intensely alkaline and ammoniacal.

Friday, 10 A. M. Condition about the same. Had some diarrhoea in the night, fecal in character. Mind wandering, but can always be recalled. Vesical disturbance continues. Called Dr. Brinton in consultation, who examined the bladder with a sound; found no thickening of coats of bladder nor any sign of calculi. The passage of the sound was attended with a great deal of pain. We both agreed as to the extreme sensibility, engorgement, and enlargement of the whole urethral canal. He advised recourse to the renewed employment of large doses of belladonna and opium in suppositories, and a repetition of the hypodermic injections of morphia and atropia. 9 P. M. The same condition. No amelioration in the vesical symptoms; mind sluggish; can always be roused; and always complaining of the discomfort from excessive micturition.

Saturday, October 12, 10.30 A. M. Pulse 124 and feeble; temperature  $104\frac{1}{2}$ . No effects, constitutional or local, from suppositories; micturition incessant, but with no pain; mind sluggish and more difficult to rouse; bowels averaging two evacuations in twenty-four hours, semi-consistent. Saturday, 9 P. M. Pulse 130; temperature  $105\frac{2}{3}$ ; quite comatose; bowels under control; bladder symptoms unchanged. Dr. Brinton having decided that there were no indications for any further surgical treatment of the bladder, the trouble from which, we both agreed, originated from a complete paralysis of the nerve centres co-ordinating its functions, caused by intense blood poisoning, I then called in Dr. DaCosta in consultation. We determined, in view of the excessive exhaustion consequent upon the annoyance from constant micturition, to employ the following treatment: half a grain of sulphate of morphia hypodermically, and 20 grains of bromide of potassium, and 15 grains of chloral hydrate every three hours.

Sunday, October 13, 10 A.M. No favorable change; bladder symptoms uncontrolled; pulse very feeble, 130; temperature  $104\frac{3}{4}^{\circ}$ ; partially comatose, can always be roused, and is sensitive to the constant micturition. From this period until Friday the 18th, when the patient died, the case gradually tended towards a fatal issue. Her intellect became more and more clouded, but she had perfectly lucid intervals until within sixteen hours of her death. The vesical symptoms never yielded. The bowels were always so much under control that, during the last twenty-four hours, when deglutition became difficult, she was supported by enemata. On the Tuesday previous to her death, her urine was examined by Dr. Bruen. There was only a trace of albumen in it; some vesical epithelium; no casts; a few pus cells; and a dense brown alkaline deposit.

Thursday, 10 P.M., October 17. Finding that Mrs. F. was rapidly sinking, we determined as a last resource to try the transfusion of milk. Dr. Hunter performed the operation, assisted by Drs. Edward Bruen and John M. Keating. Milk was obtained from a cow kindly placed at our disposal, to be milked at the moment needed. In five minutes after it left the cow, finding its reaction acid, this milk was declined. A goat was then obtained in the neighborhood, and milked into the apparatus used by Dr. Hunter. Finding it neutral, a pinch of soda was added to make it slightly alkaline. At the moment of transfusion, the pulse was 120, very feeble; temperature  $100^{\circ}$ ; respiration 44. The patient was comatose; her face very pale. When the vein was opened, she evinced some sensibility. The operation was commenced about 10 P.M., and was carefully performed, with the loss of about a half a drachm of blood, which, Dr. Hunter remarked as it oozed out, was like coffee grounds. The gradual transfusion through the funnel occupied, on account of the stagnation in the capillaries, about twenty minutes. During the operation the pulse became somewhat stronger, the patient opened her eyes several times, had some twitching of the muscles of the face, and was quite restless. Five minutes after the opera-

tion, the pulse was weaker, 114; the temperature  $97^{\circ}$ ; and the patient immediately relapsed into deep coma. Dr. Bruen, who had passed the night with her, noted a violent rigor about 1 A. M., followed by great flushings and a rapidly sinking pulse. She expired perfectly unconscious, Friday, October 18, at 9 A. M.

Whilst the above sad drama was being enacted in the front room of the second story, I was called on Wednesday, October 9, to the bedside of the Misses V., nieces of Mrs. F., and Miss F., her granddaughter, the former occupying the front room in the third story, the latter the adjacent back room. The Misses V. had complained to me on Monday, October 7, of a general malaise, and as they had some symptoms of a mild influenza which was then prevailing, I administered quinia to both of them. On the next day they both complained of neuralgic pains in the head and limbs, and Miss F. had a violent headache. I found them at this period with the following symptoms: Miss H. V., pulse 112; temperature  $103^{\circ}$ ; face very much flushed; conjunctivæ injected; complaining of excessive pain in the occipital and lumbar regions; tongue with a creamy fur, red at tip and edges; no diarrhoea; no tenderness over iliac regions; extremely painful micturition. Her younger sister, Miss J. V., in the same room, with pulse of 116; temperature  $104^{\circ}$ ; groaning with violent pain in the head over occipital region, and in the lumbar region of the back, with excessive hyperæsthesia over the whole spinal column; intellect very sluggish; face very much flushed; conjunctivæ injected; some nausea and vomiting; no diarrhoea; no tenderness over iliac regions. In both cases the urine was highly alkaline and ammoniacal. In the adjoining room was Miss F., with a pulse of 120; temperature  $103^{\circ}$ ; tongue large, flabby, and very red; great pain in the back, none in the head; no diarrhoea; no tenderness over iliac region; urine alkaline, but not as ammoniacal as in the others.

Wednesday, 9 P. M. Miss H. V.'s pulse 112; temperature

103°. Miss J. V.'s pulse 116; temperature 104°. Tongues very much furred; increased redness at the tip; breath very fetid; no diarrhoea. Miss J. V. was very sluggish in mind; had some delirium during the day, and complained incessantly about her head and back; no diarrhoea; both very much flushed. Miss H. V. was more calm, but complained also of excessive pain in her head and back. Both mentioned that they felt as if a heavy foreign body were pressing over the cerebellum. Miss H. V. had complete retention of urine all day. I took from her one pint of dark colored urine, very alkaline, and so ammoniacal as to smart my fingers. Miss F.'s pulse was 120; temperature 103°; pain in the back; tongue very red and flabby; slight fulness in the head; no diarrhoea; no iliac tenderness; urine alkaline but not very ammoniacal.

Sunday, October 13, 10 A. M. I requested Dr. DaCosta to visit the young ladies with me, and although there was every probable indication of their cases being typhoid fever, still, taking into consideration the suddenness and violence of the attack, the extreme pain in the back, more typical of typhus, and the absence of all enteric symptoms, we refrained from making a positive diagnosis until the non-appearance of the typhus eruption removed all doubt. On Monday, October 14, the characteristic typhoid eruption appeared over the abdomen of Miss H. V., and on the breast of Miss J. V., and on the morning of the 15th inst. on the abdomen of Miss F. The Misses V. had both had epistaxis, and now had some diarrhoea and tenderness over iliac regions; Miss F. had slight epistaxis, no diarrhoea, and no iliac tenderness; the tongue was red and flabby, and the wedge-shaped redness not nearly as marked as in the other cases.

For reasons which will be hereafter explained, the Misses V. and Miss F. were removed to private rooms in St. Joseph's Hospital on Tuesday, October 15, where they remained under the charge of myself and Dr. DaCosta, assisted by Dr. John M. Keating and Dr. R. Cruice, and under the care of two of the most experienced and devoted nurses. The

Misses V.'s cases seemed, from the onset, to assume a most serious aspect. The constitutional symptoms, especially the nervous ones, of Miss J., due to blood poisoning, were much graver than her sister's. Her utter hopelessness and mental torpor presented a very different phase from the calm and cheerfulness of her sister and cousin. On their first removal to the hospital, I find by reference to my daily records that they all improved as regards pulse, temperature, and general well-being, and gave hopes of a speedy recovery.

In Miss J. V.'s case, on the evening of the 22d of October, I noticed a rise in the pulse from 106 in the morning to 120, and a fall of temperature from 104° to 102°. I mentioned my uneasiness to Dr. Cruice. There had been a constant diarrhoea during the day, consisting of fetid serous stools, with great weakening in the pulse. The increased frequency of the pulse, the lowering of the temperature, the utter despondency and constant jaetitation, caused me to fear an intestinal hemorrhage, which unfortunately occurred in considerable quantity during the night, but was at once controlled by tannic acid and opium suppositories, previously prepared, and by the internal administration of muriated tincture of iron. The hemorrhage did not return, but from that moment the case assumed the gravest aspect. The pulse fluctuated from 128 to 144, the temperature from 104° to 105 $\frac{2}{3}$ °, with a tendency to coma during the last twenty-four hours, though the patient was always easily aroused to perfect consciousness, and fully realized her position. All through Sunday, October 27, there was from the bowels a constant leakage, which it was impossible to check, of a fetid, brownish serum, so offensive that her physicians and attendants could hardly approach her. There was such a complete blood dyscrasia that, for thirty-six hours previous to her death, the slightest pressure on any portion of the patient's body left a permanent bluish-black discoloration, and her whole back presented the same appearance.

The sister, Miss H. V., with the usual fluctuations of pulse and temperature, and slight diarrhoea, always under control,

continued to progress until Friday the 25th of October, when there was a complete lysis, the pulse being 82, and the temperature  $99\frac{1}{2}^{\circ}$ ; the vesical symptoms continued; there was constant retention of urine, with terrible pain in passing water, and the patient was never able herself to empty the bladder completely. An examination revealed an exceedingly engorged eversion of the mucous membrane of the urethra, with a copious diphtheritic exudation, which penetrated into the vagina, the urine in this case as well as in the sister's remaining ammoniacal and alkaline. Miss F.'s case presented, all through, the combination of a more rapid and weaker pulse, with lower temperature, and no local complications. Her tongue always remained red and flabby; her bowels inclined to constipation. Her urine remained alkaline, but never caused any trouble in micturition. She also had a complete lysis on October 26, followed on Monday, 28, by a recurrence. Miss H. V. also had a recurrence on the evening of the 28th, but there was no reappearance of the eruption in any of the cases of recurrence.

In reference to the treatment of the above cases, it may not prove uninteresting to the Fellows of the College to state that the mineral acid plan was the one principally relied upon, combined with constant sponging and a supporting *régime*. In the commencement, phosphoric acid was administered, but in view of the excessive alkalinity of the urine, the nitro-muriatic was soon substituted, without, however, at any time, producing the slightest modification of the renal secretion. Whenever the temperature reached a very high point, quinia was administered in one large dose, and although it always reduced the temperature, its effects were only temporary. I need scarcely add that, with the able counsel and kind sympathy of my friend Dr. DaCosta, no means were

left untried, and specially with reference to the vesical symptoms. The wedge-shaped redness of the tongue, first pointed out by Dr. DaCosta as typical of typhoid fever, was very distinct in three of the cases, but not quite as distinct in the fourth. The patients who succumbed, yielded to the effects of the blood poison upon the great nerve centres, and to the exhaustion consequent upon constant fever and high temperature. Not one of the cases presented a local complication sufficient to cause a fatal issue. In the case of Miss J. V., the bowels were at all times under control, and the food and stimulants unusually well borne. The exhausting serous leakage from the intestines, which finally closed the scene, originated during the last forty-eight hours, from a sodden, gangrenous condition of the mucous membrane of the intestines, due to the blood poisoning, and consequent upon the capillary stasis. In all four cases there was a complete absence of sudamina, and in the first convalescence of three of them, a sudden cessation of fever and lowering of temperature, without any critical discharge. Superadded to the extremely ammoniacal odor of the urine, all of them had a peculiar, sickly odor emanating from their persons, not unlike the mouse smell of typhus.

The alkalinity of the urine and vesical disturbance formed a distinctive element in these cases, causing very annoying results in two of them. In these, there was a very marked diphtheritic exudation. In Mrs. F.'s case, the bowels were under perfect control; and perfect absorption was maintained to the end. When deglutition became difficult she was still supported by enemata. Finding, however, that in

her case, excepting a want of vesical control, there was no serious local complication that we had to deal with, but mainly with a thorough blood poisoning, threatening paralysis of the heart from exhaustion, we determined to try the transfusion of milk. As an operation, it was a decided success; as a remedy, a total failure. No objection can be raised, however, as to any debilitating effect from loss of blood, inasmuch as it was so skilfully performed that at the utmost not more than half a drachm escaped. There were no unfavorable symptoms from the operation. Still, I believe that I express the opinion of my colleagues as well as my own, in professing an entire want of confidence in any successful results from this plan in similar cases of disease from general blood poisoning, with paralyzed nerve centres. Upon theoretical grounds, I think that it can scarcely be expected that a thoroughly poisoned circulation, whose blood-making organs are so exhausted and paralyzed that pints of stimulants and of the most concentrated and nutritious food, although absorbed, cannot rouse them, can be suddenly galvanized into new life by the transfusion of a few ounces of a chylous fluid which must require some glandular action before it can be assimilated.

Although the operation may be simple and divested of anything that is painful or revolting, still the false hopes that may be induced by its trial, and the more or less sensational element which pervades its administration, would cause me for the present to decline its employment under similar circumstances. Far different may be the result in those cases of sudden exhaustion and prostration from profuse hemorrhage,

even intestinal, where the great nerve centres are only stunned, and where the presence of a congenial fluid may rouse the heart and vessels, flagging and failing from the want of a stimulating fluid to contract upon. As yet the precious boon of a remedy has not been discovered which can permeate the living torrent of the circulation, and, eliminating its noxious agents, restore it to health and activity. It may be that as milk constitutes a congenial fluid totally free from danger in its commingling with the blood, in the course of future experiments upon animals we will be able to modify it or medicate it with oxygen, iron, or some antiseptic, which, whilst affording nutrition, may also neutralize or antagonize some of those pernicious elements which are sapping its vitality.

In the presence of such a calamity as I have depicted here to-night (where under treatment skilfully and prudently modified to suit the age, constitution, and symptoms of the patient, with no effort omitted, and with the antecedents all in our favor, two succumbed and two recovered), art stood helplessly by, and nature ran her course. We can only humbly exclaim with the old French surgeon, "Je l'ai pansé; Dieu l'a guéri."

Miss H. V. and Miss F., seemingly entirely convalescent on the 24th, had a recurrence of the disease without any appreciable cause, and without any intestinal disturbance. The former, after a profuse dia-phoresis on Nov. 6, went into perfect convalescence, while the latter's symptoms, as to rapidity of pulse and high temperature, were much more aggravated than in the first attack. On the 16th of November

she broke out into a profuse diaphoresis, lasting forty-eight hours, and has been fully convalescent ever since. It may be interesting to note that one of the nurses most experienced in such cases, always insisted that the absence of sudamina and diaphoresis in the convalescence of Mrs. F., and the first convalescence of Miss H. V. and Miss F., was a sinister omen, and predicted a relapse. It has been observed, I believe, by Chomel that, as a general rule, the appearance of sudamina is favorable; whether, in the more malignant fevers, a convalescence by lysis or crisis constitutes a ground for differential prognosis, is a question which my own observation does not allow me to solve. From my experience in these cases, it has suggested itself to me that change of air in the earlier stages, as a means of assisting in arresting the disease, is quite worthy of consideration. The result upon those who were moved was at first entirely satisfactory; both pulse and temperature fell, and there was no prostration consequent upon their removal. Should there be a specific poison with constant tendency to redevelopment, it would seem almost imperative, at the first opportune moment, to remove the patient from its influence; while on the other hand, should the illness be considered to arise from defective drainage, even should the defect be remedied, it may be some time before the surrounding atmosphere can regain its normal purity, and, in a lowered state of vitality (as in cases convalescent from blood poisoning), it does seem logical to remove the patients as soon as possible from the noxious influence.

Mrs. F., her two nieces, and her granddaughter,

having resided last winter at 2304 Spruce Street, located themselves, on July 6, at the dwelling 2216 Spruce Street, and, having partially arranged the house, closed it for the summer. Accompanied by the above mentioned relatives, and by a young cousin, Miss N., Mrs. F. left this city on the 18th of July, for Snowshoe, in Centre County, about 1200 feet above tide water, where they remained until the 26th of August. They reached Renovo, on the Philadelphia and Erie Railroad, on the evening of the 26th. Miss N. and Miss F. left Renovo on the 29th of August; Miss N. for her home in Chestnut Street, where she has ever since enjoyed perfect health, and Miss F., the granddaughter, to pay a visit to some relatives at a country residence in Rhode Island, six miles from Providence, where she remained until the 26th of September, when summoned by her grandmother's illness.

Miss F. reached the city enjoying perfect health, as did the Misses V., until Monday, October 7th. I had on several occasions, at my early visits to Mrs. F., noticed a peculiar odor, especially near the stationary washstand. My son, Dr. John M. Keating, had also had his attention called to this smell, but we had concluded that it arose from emanations from our patient's person, combined with the peculiarly heavy atmosphere of the city at that time. I was afterwards informed by Mrs. G., a married niece of Mrs. F., who opened the house for her, and shared her apartment on the night of her arrival, September 16, that in the middle of the night they were both awakened by a sense of suffocation, and at the same time noticed the prevalence of a most offensive odor, to rid them-

selves of which they were forced to open all the windows and doors in the two rooms. Referring to my notes of Mrs. F.'s case, it will be remembered that a sudden and violent change took place on the night of Friday, September the 20th, and that on Saturday the 21st, all the indications pointed to an entirely different character of fever from that which had been supposed to be present. On Sunday the 22d, the symptoms, having more fully developed themselves, I became more and more suspicious of the nature of the disease. I then recalled to mind the fact that this lady was a pioneer in a new row of houses of whose drainage I was perfectly ignorant. I also reflected that the house had been closed the whole summer until opened on the day of her arrival. In this frame of mind I questioned her about its sanitary condition, and was informed by her that she had made every possible inquiry from the agent before renting the house, and had been assured that every attention had been paid to secure a thorough system of drainage. To ease my apprehensions, however, as she knew that I was very critical on this point, she determined to have it again inspected.

On the following Tuesday, September 24, I was assured by herself and niece, Miss H. V., that they had sent for some one then employed, as I understood, in attending to the plumbing in a new row adjacent to theirs, to inspect the premises; that this individual had accompanied Miss H. V. into the cellar; had shown her a trap which, he told her to mention to the doctor, rendered the house perfectly secure; and had declared that as he had superintended the construction of these houses, he could vouch for their drain-

age. Under such assurances, I dismissed all apprehension of Mrs. F.'s having contracted her disease in her present location. So fully satisfied was I with this report, that, having occasion, within two or three days, to visit the agent on account of some repairs which the house needed, I incidentally mentioned that I feared that Mrs. F. had typhoid fever, and, upon his remarking that he hoped that I did not attribute it to the house, I cordially assured him that I had every reason to believe that it could not be ascribed to any fault in the premises. I mention this fact to dispel any erroneous impression that I had formed any preconceived, unfavorable opinion as to the healthiness of this row of houses, and upon prejudiced views had endeavored to raise a theory of the cause of the present endemic.

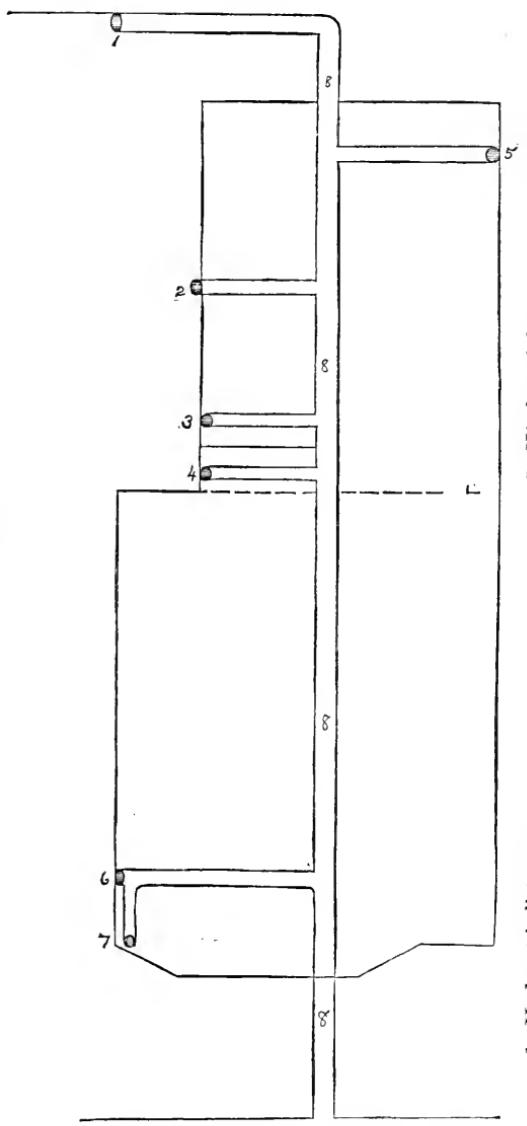
So fully impressed was I with the above report on the sanitary condition of the premises, that when summoned to attend the Misses V., notwithstanding the peculiar odor which still prevailed through the house, and which all noticed who had access to it, I immediately ascribed the malady to the prevailing influenza. It was then that, appalled by so sudden and violent an outbreak, we were reluctantly compelled to suspect that there were local causes prevailing which alone could solve the sad mystery. Upon Dr. Da Costa's questioning me as to the sanitary condition of the house, I gave him the result of my own previous inquiry. At Dr. Da Costa's suggestion, I made an appointment with Mr. Bryan, an intelligent and expert plumber residing on Spruce Street, to meet us on Tuesday, October 15, at 10 A. M., and report on the condition of the drainage of

the house. As the result of his investigation, in which he was accompanied by Dr. John M. Keating, I will give you the *ipsissima verba* of Mr. Bryan, as written by him for a New York journal.<sup>1</sup> His short but emphatic response to us was: "This family has been actually living in a sewer." It is proper to state here that, during the investigation, when Dr. John M. Keating, in company with Mr. Bryan, reached a portion of cellar to which his attention was particularly directed by Mr. B., he instantly identified, but in much greater intensity, the same peculiarly offensive odor which every one had observed in Mrs. F.'s room. Upon Dr. Da Costa's asking Mr. Bryan whether anything could be at once done to protect the inmates from further injurious results, he answered, "I can trap the drain pipe at its exit from the cellar into the sewer, but this will be only a partial

<sup>1</sup> "I made the examination, and found there was no main trap in the drain pipe. There was a three-inch galvanized sheet-iron corrugated pipe leading from the French roof between the outer front wall and the studding, and exposed in the cellar and connected with the terra-cotta drain near the cellar floor; every slip joint of which was pouring out its deadly contents of sewer gas, to be taken up by the large portable heater which was supplied with cold air from the cellar and distributed through the main building. I also found the waste pipe from the second and third story wash-basins trapped in the cellar, and smelling at the connection with the terra-cotta drain pipe near the floor. Here were two stories of waste pipe (with no traps under the basins) to help to vitiate the air of their respective apartments. I also found a four-inch rain conductor run down on the outside of the back building, near the main building: all joints of which poured out their quota of sewer gas to be carried into the house through the open windows in pleasant weather. You could not stand at any of the open windows in the rear portion of the house without being sensible of the presence of sewer gas in the surrounding atmosphere, caused by the exhalation of foul vapor from the rain-conductors of the surrounding properties. After digging up the front of the cellar to put in a main trap, my workmen found the terra-cotta pipe jointed with common lime mortar." (See Figs. 1 and 2.)

FIG. 1.

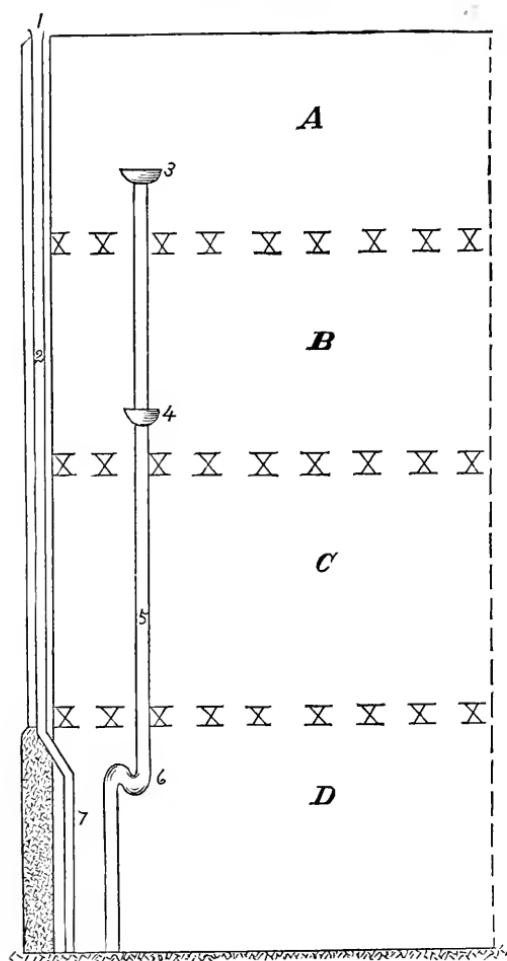
Ground plan.



Sewer on north side of Spruce Street.

FIG. 2.

Elevation plan.



1, 2, 7. Rain pipe from roof.

3, 4, 5. Stationary washstands and waste pipe.

6. The same trapped in cellar.

A. Third story room.

B. Second story room.

C. Parlor.

D. Cellar.

X. Transverse section of joists.

remedy, and had I any relative sick in this house that could be removed, I would consider it an imperative duty to do so." In accordance with these views, the Misses V. and Miss F. were removed within four hours to private rooms at St. Joseph's Hospital. Mrs. F. was so prostrated—her condition so precarious—that we would not incur the risk of her removal. She succumbed three days later.

Taking into consideration the complete immunity of Miss N. from the disease; the rapid change in the type of the disease in the case of Mrs. F.; the sudden and violent outbreak of three more cases in the same dwelling at the same moment—one of the victims, Miss F., having remained at Renovo but a few days, the same period of time as her cousin, Miss N., and having then sojourned for *four weeks* near Providence, R. I.<sup>1</sup>—in combination with the emphatic report of Mr. Bryan on the sanitary condition of the house, we could not hesitate, under such a combination of circumstances, to ascribe the cause of this endemic to defective drainage in the house. I would also call attention to another fact which very forcibly strengthens our position in reference to the immediate cause of the disease. Between the 1st and 5th of October, Mrs. F.'s nurses, forced to keep a constant draft of fresh air in her room, on account of the impurity of its atmosphere and the peculiar odor pervading it, suffered so much in the night vigils from

<sup>1</sup> Miss F. arrived in Philadelphia from Providence at 10 P. M., Sept. 26. She sickened (as by her own statement) on Saturday, October 5. She was *ill in bed* on Monday, October 7. The eruption appeared on October 15. From this it will be seen that the exact period of incubation in her case was *eight days*, the eruption appearing on the 10th day after.

the coldness and dampness of the air, that they requested to have the furnace lighted in the front cellar. My recollection of this event is revived by the fact that as Mrs. F. was rapidly approaching convalescence, she endorsed the request, saying at the same time that, as she was rapidly approaching the period of sitting up, the room ought to be previously warmed. I think that the furnace was started about Monday, the 7th of October. On Tuesday night, October 8, the relapse took place, with all the symptoms of blood poisoning so intensified, and the whole case so much aggravated (without any signs of intestinal ulceration from which there could have been re-absorption of septic matter), that I was completely at a loss to explain it.

At the time of Mr. Bryan's investigation, the furnace was not in operation, the offensiveness and oppressiveness of the atmosphere of Mrs. F.'s room having so much increased under its employment that the nurses, in accordance with my own feelings, urged its discontinuance. Mr. Bryan stated verbally to us at the examination, that it was most fortunate that the furnace was not in operation, as the state of affairs would have been exceedingly aggravated for those persons occupying rooms in the front of the house. Mr. Bryan described the cellar as the focus of the poisonous infection from the exhalations escaping from an imperfectly jointed, corrugated galvanized iron pipe extending from the sewer to the top of the house. The draft of cold air which fed the furnace came from the cellar, there being no flue connecting the furnace with the air from the street. This foul air of the cellar, heated by the furnace, was

the atmosphere which Mrs. F. was breathing in her room day and night during her early convalescence, and which her nieces and granddaughter were stealthily imbibing during the night. Hence, most probably, the sudden change in Mrs. F.'s case on the night of Tuesday, October 8, and the rapid and virulent outbreak among the other inmates of the house on the 9th. It would be well to call attention at this moment to the fact, which I have learned from personal experience and report, that in this city the necessity of having a connection between the furnace and the street is often overlooked, and that the atmosphere prevailing in many of our houses emanates from the pent-up, stagnant air of the cellar, having nothing to change it or purify it.

There is another habit prevailing in this city which I consider to be extremely prejudicial to health and liable to great risk. Many of our citizens, in going to summer quarters, close their houses, and, to prevent depredations, almost seal them up hermetically. Should there be any defective drainage, or even stagnant water in the traps, the atmosphere of the house is contaminated during the whole summer. Upon a few hours' notice the house is opened and inhabited, without even flushing all the pipes of the water-closets and stationary washstands. The latter procedure I have insisted upon for several years past with my patients, and ordered it to be continued for at least two hours before the inmates' return. As soon as the typical eruption appeared on Mrs. F., I ordered all the evacuations as soon as passed to be disinfected with carbolic acid and powdered carbolate of lime, and solutions of chlorinated soda and sulphate of iron

to be thrown at intervals into all the stationary washstands and water-closets of the house. I condemned the water-closet on her floor to the exclusive use of all her excretions, forbidding the other inmates at the same time to use it under any circumstances. Hence there was no chance of contamination from this source. Her nieces and granddaughter visited her very seldom, and, in conformity with my instructions, never at the time that there were any discharges. Having placed her in the charge of two good nurses, who watched over her in turn, the presence and services of any members of the family were never required. As my son and myself visited her frequently during the day, we had our instructions fully carried out.

It is not my intention, and it would be a work of supererogation on the present occasion, to go into an elaborate discussion of the etiology of typhoid fever. You are aware that there are two prevalent theories. One teaches the spontaneous, autochthonous, or *de novo* origin of the disease from a specific poison, which, after its passage through an individual, and further decomposition, can be a source of contagion; according to this view, the substances to be decomposed must be animal, consequently fecal masses, and above all, human excrement. This is the view advocated by Murchison. The other theory, claimed by Budd, generally adopted by the German school, and of which Liebermeister in Ziemssen's Cyclopaedia is the able exponent, denies the spontaneous or *de novo* origin of the disease, and believes in the propagation of the so-called specific germ, from a parent germ. It would be useless to restate the facts and observations which support one or other of these views, and while

the voluminous records of investigation have not solved the question of etiology as a scientific problem, still, for practical purposes, we are fully able to stamp out typhoid fever as an epidemic. The prevalent belief of this day is that each zymotic disease is dependent upon a specific poison or germ, so-called because it will, when introduced into the proper human soil, produce only the phenomena of the disease from which it originates. Thus, the scarlet fever germ will only produce scarlet fever, but the type or expression of the disease may depend upon the condition of the individual, and to some extent on the vitality of the poison.

It is generally admitted that the specific germ of typhoid fever reaches the system by means of the alimentary canal, and that its greatest activity is displayed when swallowed in drinking water or milk; hence its most frequent occurrence in the country, where cesspools connect with the drinking wells or dairy houses. Next in order it occurs where the air, and consequently all the ingesta, are saturated with the germs; to the latter class my paper has special reference. Again, where the germs come in contact with the open air, as from upturned, saturated soil or banks of low, polluted rivers, under hot August days and cool nights, with extreme evaporation of the poison during the day and condensation at night.

The combinations found in sewer gas, where animal and vegetable decomposition have taken place, may, through some unknown cause, generate *de novo* or spontaneously this poison. The specific properties which give it the form of scarlatina, measles, typhoid fever, or diphtheria, may be associated together in the

same cesspool or sewer, and each one of these affections will then appear in that individual most susceptible to its particular influence. Again, the immunity of certain persons exposed may depend upon previous mild attacks, and it has been proved that during an epidemic of any of these diseases few escape some symptoms of poisoning, however slight; but even this abortive form may protect the individual. Hence, it may be said that while the type or succession and severity of the symptoms can be regulated by the individual and epidemic influence, the specific character of the poison, whether a germ or gas, or whatever we may call it, depends for its elaboration or fabrication upon heat, moisture, animal and vegetable decomposition, apart from atmospheric air. The name, then, of pythogenic fever, substituted by Murchison, does not hold good for typhoid fever, because it withdraws the specific character of the disease; it can only be efficient in septicæmia or foul-air poisoning, with its variety of irregular symptoms, independent of specific origin.

Although Dr. Budd, I believe, maintains the contagiousness of typhoid fever, yet hospital experiences, from which we can derive the most satisfactory and conclusive evidence on the subject, give but little support to this view; and whilst it is of universal experience that hospital attendants are very liable to be attacked in nursing cases of typhus fever, it is also generally admitted, on the other hand, that medical attendants upon typhoid or enteric fever rarely contract the disease from the sick under their care. Thus, during twenty-three years, from 1848 to 1870, while 5988 cases of enteric fever were admitted into

the London Fever Hospital, only 17 residents in the hospital contracted the disease, and most of these had no personal communication with the sick. Of the 17 cases, 9 occurred in nurses, and 12 of the 17 occurred subsequently to 1864, when various extensions of the hospital buildings led to a serious derangement of the drainage. But the most remarkable fact is what follows. Since 1861 it has been the practice in the same hospital to classify the patients, thus: The typhus, relapsing, and scarlatina patients have been kept in distinct wards, whereas the patients suffering from enteric fever have been kept in the same wards with the many other patients sent to the hospital, but who have not been the subjects of any form of contagious fever. The two classes have remained together both during the acute stages of their maladies and in their convalescence, and in most instances for several weeks. The same night chairs have been used by both classes, and the employment of disinfectants has been exceptional. Here is the result. During nine years 3555 patients with enteric fever have been treated along with 5144 patients not suffering from any specific fever. Not one of the latter has contracted enteric fever. In examining the statistics of St. Joseph's Hospital, I find that while 272 cases have been treated there in ten years, in the same wards with other cases, the patients using the same night chairs, and the stools not being disinfected, there is not a single record of the disease having originated in the house.<sup>1</sup> My friend Dr. Guitéras has examined the records of the

<sup>1</sup> See Murchison on Continued Fevers.

Philadelphia Hospital, and can only find that within the last ten years two attendants have been attacked with typhoid fever—one the resident physician, who may have contracted the disease outside, and a nurse, whose case was doubtful. All evidence, therefore, is, I think, in favor of the view that the fresh evacuations are harmless, and that the poison is developed during their putrefaction.

Whilst admitting that enteric or typhoid fever can originate from the specific poison generated in decomposition of the evacuations, it seems to me that it must also be admitted that the disease may have a spontaneous or *de novo* origin. The individual experience of most of those here present, combined with the voluminous published records of the autochthonous origin of the disease, in its sudden outbreaks in isolated places, and under circumstances where there had not previously existed any trace of its continuous origin, are sufficient proofs in themselves to justify the assumption that where typhoid fever breaks out in a private dwelling or hospital, without the previous introduction of a case of the same disease, there is something radically defective in the sanitary arrangements, and that either the air or water is polluted with decomposing excrement. Not to trespass upon your time, I will merely recall the celebrated Clapham school cases cited by Murchison, where twenty boys out of twenty-two were seized within three hours with fever, vomiting and purging, and excessive prostration, and the only cause which could be discovered originated from a choked-up drain, which had been opened, cleaned out, and its contents spread over the garden adjoining the boys\*

playground, two days before. The morbid appearances in the two fatal cases were those of typhoid fever. It may be objected in regard to these cases, as well as in regard to those reported by me to-night, that the course of the disease, especially in its incubation, was more rapid than that which usually characterizes typhoid fever, but this may be accounted for by the intensity of the poison.

In Miss J. F.'s case, as it had been a month since she left Renovo, on the 29th of August, it was not probable that the period of incubation should have lasted until the 9th of October. I beg leave also to cite a more striking instance in our own country. I refer to the outbreak of typhoid fever at Bar Harbor, Mount Desert, in August, 1873, so accurately and graphically described by Dr. W. J. Morton in the Boston Medical and Surgical Journal for October, 1873. In the little town of Bar Harbor, on Frenchman's Bay, situated on a beautiful slope of the island of Mount Desert, in an atmosphere in which, from its purity and exhilaration, one experiences a joyousness of existence, and where all "save the spirit of man is divine," there broke out, at the Bay View House, during the month of August, 1873, an endemic of thirteen cases of typhoid fever, all caused from an overflowing cesspool, maintained within ten feet of the verandah of the hotel, in combination with the drain in the same field full of putrefying material collected from the kitchen garbage of the Harbor House. Dr. Morton exhibits a diagram of the cesspool, and its location as regards the hotel, and proves conclusively that in a crowded house, a case of typhoid fever was associated with every room

except one, on the side of the house exposed to the drain emanations, and that the inmates of the room which, owing to its peculiar construction, formed a pocket in which ventilation was a remote possibility, were the most seriously affected. During my sojourn in the island in the summer of 1874, I visited the site of this dreadful disaster, which nearly blighted the prospects of this beautiful spot as a place of summer resort. Upon careful inquiry from the most reliable lay sources, the town having always been so healthy as not to require any resident physician, I could not discover that, within the memory of any of its inhabitants or any of its constant visitors, a case of typhoid fever had ever existed there previous to the outbreak just described.

Among the innumerable records of similar instances, I have cited these cases as a proof of the spontaneous or *de novo* origin of typhoid fever, believing that any one uncontested proof of its autochthonous origin would be sufficient to give reason for the faith that is within me of the occurrence of the spontaneous outbreak of the disease under a combination of the same circumstances.

Another point which it seems to me is often overlooked in the discussion of this subject, and which is of paramount importance in the prevention of the disease: We admit the theory of a living germ of specific poison, and forget that there is another factor in the case of equal importance. I refer to the receptivity of the soil or blood into which this germ or poison is introduced. In a normal condition, we admit the autonomy of the individual, but pathologically all stress is laid upon the potency of the

germ, and very little reference to the varying constitutions of the recipients. Yet, when we come to analyze the fact, admitting either of the above theories, both of which unite in the belief of a specific poison or germ, we have to admit that it is due to the susceptibility of the soil or blood, to select the specific germ from the variety collected in the emanations from decomposing organic matter, which can fructify and reproduce its characteristic phenomena. Whence this peculiar affinity of the soil or blood for the specific germ? We must all acknowledge that the varying virulence in smallpox or scarlet fever is not always due to the quantity or quality of the poison, but to the constitution or receptivity of the blood of the individual.

In the case of Miss F., there were no abdominal symptoms throughout the disease; not a symptom of any intestinal disturbance. The condition of the tongue, very red and flabby, pointed throughout the whole case more to a general blood disease than to the effect of a specific poison. Still, Miss F. had been subjected to the same influences as the others.

In the year 1850, I had occasion to visit a family in Race Street, in which two of the children were attacked with measles, one with scarlet fever, and a fourth one with a hybrid of measles and scarlet fever combined, a phenomenon which the late Professor Meigs observed with me. All the inmates of the house were affected more or less, and one of the servants was attacked with typhoid fever. At the suggestion of Professor Meigs, I examined the house carefully, and finally discovered that the cesspool of the neighboring house was leaking into the cellar of

the back building. The children slept in the second story of the back building, the servant who had typhoid fever slept in a sort of out-house, but on the ground floor, in close proximity to the noxious exhalations from the infected cellar.

In 1863, I attended a family in East Delancey Place, where there prevailed, within two weeks, scarlet fever, measles, diphtheria, and a case of typhoid ambulatorius. An examination of the premises revealed in the cellar an old cesspool, covered up without having had its contents removed. The cement or mortar had cracked, and foul exhalations were oozing out. I could cite one house in Thirteenth Street, where the whole family of a gentleman who had changed his residence from the country, suffered within a month from attacks of measles, scarlet fever, and diphtheria. Another, in Walnut Street above Twenty-first Street, where, after the family had moved in, I was in attendance for two months for cases of scarlet fever, diphtheria, and typhoid fever. In these last instances, upon examination, it was discovered that, though the houses were otherwise in a perfect sanitary condition, no trap had been placed at the exit of the terra-cotta drain in the cellar; a defect in drainage which I am afraid, even in the best and most expensively constructed houses in our city, is more common than most of us are aware. Even in the houses cited, there were inmates whose powers of resistance enabled them to throw off by the different emunctories the results of these poisonous agents. Another class become more or less gradually acclimated, others brokenly live on, themselves and their medical attendants ignoring the

cause of their continued malaise, dragging out a miserable existence, subjected to the same influence as their more weakly constituted brethren in whom a violent explosion of the disease may have produced a fatal result. How many cases of so-called abortive typhoid fever we have all of us seen, in which the general symptoms almost with certainty pointed to the character of the disease, but in which the absence of the more pathognomonic signs made us hesitate about our diagnosis. In all these cases the essential cause is the poisoning by emanations from decomposing organic matter, in which originate, according to the modern theory, the germs of the various types of diseases.

There is then an affinity and selection on the part of the soil for the specific germ. One soil receives and fructifies the scarlatina germ; another, under the same circumstances, the typhoid fever germ; a third, the diphtheria germ; but will any one attribute this to mere accident? Can there be here, in accordance with our modern view of genesis, a specific ovum or cell in the blood of the individual, which is vivified by its congener cell in the sewer gas? Account as we may for the development of the specific germ, there must be receptivity in the soil which receives, and it is perhaps destined for future experiments to determine what is the peculiar element, either present or wanting, in the blood, which endows it with this receptivity or susceptibility. Quinia, discovered not through any observation as regards the character of the malaria spore, arms us with Achillean shield in the presence of vegetable decomposition, and of its resultants as

seen in the Protean forms of malaria. The same drug is becoming our mainstay in the treatment of the blood poisoning of septicæmia. May I not suggest that, among the preventives, some combination of quinia with carbolic acid or other antiseptic agent, dissolved in an innocuous fluid like milk, may yet be transfused into our circulation, and antagonize that specificity or receptivity which seems to be as essential a factor in the poisoning as the germ itself?

In an able and elaborate essay by my friend Dr. Cleemann, on Meteorology and Epidemics, published in the Transactions of the College for 1877, he says that in view of the facts which he has presented, he is justified in giving "a denial to any extended effect of sewer emanations in aggravating our mortality from typhoid fever; but," he continues, "it may be further negatived by means of certain data obtained from the Highway Department. From these it appears that sewer connections (of water-closets, stationary wash-stands, and house drains) are more numerous in the eighth, ninth, and tenth wards than in some other portions of the city . . . . yet in the latter the mortality from typhoid fever exceeded that of the former . . . . and the same is true, as regards the average, for ten years."

Gentlemen, I place but little confidence in data derived from mortuary statistics, based as they are on a supposed, extreme precision in diagnosis, which we all know does not exist. Many other incidental causes must be considered before we can accurately reach any such conclusion based upon Dr. Cleemann's premises. In the eighth, ninth, and tenth wards, it is at least presumable that with the same

proportion of cases, the ratio of deaths would be much less on account of the different conditions and surroundings of the patient as to food, nursing, better medical attendance, more accurate diagnosis, and all the comforts and luxuries of life. These are important elements to be taken into consideration. Ten years ago I was consulted by an old physician with a very large practice, in the Nineteenth Ward, for a case of supposed typhoid fever which, upon careful examination, I discovered to be one of retro-uterine haematocele, softened and discharging per anum. In the course of my attendance, he informed me that he was in the habit of considering every case of an asthenic type, as typhoid fever, as he did not recognize any specificity in the disease.

Whilst I fully agree with Dr. Cleemann in reference to the causation of typhoid fever from the emanations of a cesspool, still I think that a "stinking privy outside of a house is not as dangerous as a badly constructed water-closet," or an imperfect connection with a drain, in a house. If, however, I apprehend correctly the gist of his argument, it is to be thus syllogistically stated: In the Eighth Ward, the sewer emanations substitute and equal the cesspool emanations in the Nineteenth Ward; but in the Eighth Ward the mortality from typhoid fever is less; therefore (he concludes, in general) sewer emanations have less effect in aggravating the mortality from typhoid fever than cesspool emanations. I deny his major proposition, that the sewer emanations in the Eighth Ward are equal to the cesspool emanations in the Nineteenth. Such an admission would be a sad commentary on the drainage and sewerage of the

Eighth, Ninth, and Tenth Wards, where it certainly must be granted that, from the character of the mansions constructed, the wealth and intelligence of their inmates, and the constant surveillance of the ablest medical men, if the laws of hygiene and sanitary science are anywhere respected or carried out in our city, it must be in those wards where all the surroundings and essential conditions are so favorable. To intimate that, notwithstanding all our progress in drainage and sewerage, our best constructed houses, where science and wealth have exhausted themselves to insure health, are as liable to be contaminated by emanations from our present system of sewers (and with more danger from their intensity) as by the cesspool exhalations, is a retrograde step, and calculated to strike terror and dismay into every heart and home.

Dr. Cleemann, in the same essay, inclining to the continuous specific germ theory considering a cesspool as a more probable source of pollution to the air, continues thus: "Again the [cesspool] pits are often but imperfectly lined, allowing the noxious matters to penetrate into the surrounding soil: whether the poison can thence undisturbed reach the atmosphere above, may be doubtful; but as our streets are being constantly excavated for the laying down or repairing gas and water pipes, and the yards of the houses and adjacent lots dug out for new buildings, the infected soil is likely to be, at some time or other, directly exposed to the upper air." It will thus be seen that Dr. Cleemann always admits that the poisonous agent, in all these cases, is in the decomposing organic excreta. Why it should be

divested of any of its more noxious qualities in a pent-up sewer, or more highly intensified in the earth, which is partially disinfectant (hence the use of earth-closets), or by the action of the atmosphere, which is supposed by oxidation to disarm it of some of its virulence, I am at a loss to explain. Adopting the view, however, to which he inclines, the continuous specificity of the poison—as in our large cities we have typhoid fever always with us, and the drain pipe is but the continuation of a typhoid intestine—it would be difficult to seize a moment when some of its germs might not be floating through our sewers, regenerating and fructifying in the congenial soil or nidus of decomposing organic matter, and ready at any point where there was a breach in the drainage bulwarks, to seize upon its victim. Even here, sewer emanations come into play for their share of the disaster, as without them, how could the enemy reach its victim? If then my premises have been correct, I think it inevitably follows that by a perfect system of drainage and sewerage alone can we rid ourselves of that decomposing organic matter which, if not the *fons et origo* of the disease, at least affords the fruitful soil of its development and extension.

It should be eminently our object and duty, as guardians of the public health, to inaugurate and maintain such a sanitary condition as will prevent the existence and action of the cause. It is the duty of our profession to impress upon the community at large, as well as upon individuals, the importance of keeping a vigilant eye upon those great cloacæ of our city, those secret portals to our homes and fire-

sides, where pestilence is stealthily waiting to waft its lethal vapors. It has been insinuated in various quarters that, as physicians, we are more engrossed in the cure than in the prevention of disease, and some months since, in a private conversation with a friend of a sister profession, he jocosely remarked, "You doctors have a great many cures," enumerating them, "but very little prevention;" to which his daughter, a young and sprightly girl, added with great *naïveté*, "But you know the pound of cure is worth more to the doctors than the ounce of prevention." *Se non è vero, è ben trovato.* I am fully convinced that with the progress which the world has already made in the material condition and enlightenment of the masses, in the rapid strides in sanitary science by means of which many of those fearful epidemics which in the past have devastated the world have disappeared, there is every hope of still further progress in stamping out many of the diseases which still hang around us. With a more perfect system of drainage and sewerage, and a more general application of the laws of sanitary science, we shall utilize or rid ourselves of those noxious agents which otherwise, through man's ignorance, avarice, or stolid indifference, ever threaten to sap the foundations of his existence.

There is no valid reason why, should the great hygienic laws which ought to govern the human economy be fully recognized and strictly carried out, the same epitaph should not be written for many of our community, which is recorded in Holy Writ for the venerable patriarch Abraham: "Decaying, he died in a good old age, having lived a long time;

and being full of days, he was gathered to his people." Adopting whatever theory we may as regards the causation of typhoid fever, our sole aim should be to prevent its spontaneous origin in the one case, or its continuous development in the other. Prevention is now the important duty before us, and to rouse this body, which represents the intelligence, the influence, and the power of the medical profession in this community, to a full sense of its responsibility in view of such a calamity as I have just narrated, is the chief object of my presence here to-night.

The present depreciation in the value of labor and real estate has given a sudden impetus to the construction of cheap houses, wherein ignorance, recklessness, and avarice, combined, have caused contractors and builders to erect dwellings, fair and attractive in the outward appearance, but in reality whitened sepulchres.

In conclusion, to my younger professional friends here present, I will predict that the day is not distant when, the present financial panic having passed over, our great commonwealth, disembowelling itself of its vast mineral wealth, will gather it into its metropolis. Then the city which now counts its thousands, may reckon its millions. This surging mass of humanity will be pouring out its festering mass of excreta. Woe to those who are then the guardians of the public health, if from their want of prescience, their ignorance, or their apathy, this huge city should extend itself from Holmesburg to Chester, as a mighty maze, without any well-devised plan of drainage and sewerage, and inadequate to the re-

quirements of a great metropolis. I trust that this body, in connection with the County Medical Society, will agitate this subject, and not rest until we have an appointment by legislative enactment of an expert sanitary inspector, to whom will be entrusted the sanitary regulation of every house, previous to its completion, and who will be invested with the proper authority to seek and remedy the causes of any zymotic endemic. I believe that a persistent, intelligent, and forcible appeal on the part of the medical profession will be successful in rousing public sentiment to the great necessity of protecting every individual to as full an extent in his sanitary conditions as in his civil rights. In fact, to secure for him, in the concise language of the Father of Medicine, the ineffable blessings of "pure air, pure water, and pure soil."

Should, however, our efforts prove fruitless, owing to the apathy of the community, the successful opposition of the avaricious and sordid, and political intrigues, we will have the satisfaction of having striven faithfully to fulfil our great mission of the prevention as well as the cure of disease, and in the bitterness of our hearts, can exclaim,

**"EHEU VENALIS CIVITAS, MOX PERITURA QUANDO  
EMPTOREM INVENIES!"**

NOTE.—I desire to acknowledge the valuable assistance received from Dr. John M. Keating in making the sketches illustrating the drainage of the house in which the above reported cases occurred, and to thank him for many valuable suggestions.



[After the reading of the preceding paper, Dr. GEORGE HAMILTON said:—]

Independently of my experience in this city, I have seen, during a country practice of more than ten years' duration, much of the disease now under consideration. For the first five years of this practice, bilious remittent was the prevailing type of fever, gradually supplanted by the typhoid, which sometimes prevailed to an extent and with a fatality never seen in this city, as will be manifest in the fact that, within the space of twelve consecutive months, four cases of intestinal perforation occurred in my practice. The disease existed at the same time in many other rural sections, and in this city an unusual number of cases occurred, yet the mortality here was moderate. In regard to the origin of the disease, for this is the vital question of the subject as presented to us this evening, it was at no time in my power to attribute it to local conditions, for these remained essentially the same, as is usual in old settled and well cultivated sections, and that too, although the disease might rage epidemically one year, and the next be scarcely seen. A wet, warm spring, productive of luxuriant vegetation, succeeded by a hot, dry summer was thought, both popularly and by practitioners, to cause increase of fever, remittent or typhoid, in the ensuing autumn; and to this view my own opinion inclines. The country over which my practice extended was hilly (the heights of Brandywine on one side, those of Red Clay Creek upon the other), and abounded in springs of fine water. As local conditions did not explain the occurrence of a severe and widely spread epidemic of fever, it was but natural that the practitioners of the vicinity, with nearly one accord, should incline to the opinion that atmospheric, telluric, electric, and hygrometric conditions were in some way influential in the development of the disease. Neither the hills nor the valleys, the residence of the wealthy farmer nor the humble cottage of the tenant, were exempted from the visitations of the disease, and, having entered the house of a family of moderate or large size, it seldom disappeared until more than one member had suffered an attack. The most prominent instance of this kind occurred in the family of a wealthy farmer, where seven out of eight members were affected;

all, with a single exception, dangerously. In this case it must be noted that the disease did not originate on the premises. A son, aged about twenty years, who had been sent on business into Maryland, forty miles distant, after remaining there several weeks, contracted the disease and was brought home. In another family of seven, four or five were attacked, and here again the disease was brought into the family by the mother, who fell sick while nursing a relative three miles distant from her own home.

My present location, at Sixteenth and Summer Streets, has been occupied by me since returning to the city, thirty-three years ago. Intermittent, remittent, and typhoid fever prevailed at that time to a greater or less degree, especially toward the Schuylkill. For many years past intermittent and remittent have in great measure disappeared, whilst typhoid has increased, yet, apparently, not in proportion to population. Many years ago the late Dr. J. K. Mitchell was called to consult with the late Dr. Lewis P. Gebhard and myself in a severe case of typhoid fever near my residence. He informed us on this occasion that nearly all the cases of this disease seen by him were, as in that instance, in the suburbs, scarcely ever in the central portions of the city where the families he attended chiefly resided. Yet sewers, with their requisite house connections and cesspools, existed in great number in the central parts of the city at that time, but very few in comparison in the suburbs, where fever of any type was most frequent. During my practice in the city, four cases of typhoid fever have come under my notice in one family; two cases in two or three families; yet, setting these aside, only one patient in a family under my care has been attacked: an experience in striking contrast with that met with in the country, where neither sewer gas nor innumerable cesspools are to be found. The increase in the number of sewers, water-closets, and cesspools in Philadelphia, for many years past, has been simply enormous, and, as a consequence, opportunities for the contamination of the atmosphere, drinking water, or milk, are greatly augmented. If, as has been declared, sewer gas were the most potent and common agent in the production of typhoid fever, and if so large a proportion of the houses in the city were infected by it, would there not be reason to expect quadruple the amount of mortality reported in the weekly returns? The late Dr. Wm. W. Gerhard, eminent as an authority on typhoid fever, stated to me about five years before his death,

"that the disease was by no means so prevalent in proportion to population nor so fatal as in former years," and in this opinion my own experience and observation lead me to concur.

[Dr. RICHARD A. CLEEMANN said:—]

Since Dr. Keating has attacked the views which I presented in my "Report on Meteorology and Epidemics for the year 1876," with regard to any *extended* effect of sewer emanations in aggravating our mortality from typhoid fever in that year, it is perhaps necessary for me to say something in reply.

In the preparation of the Report quoted, I collected more material in favor of the opinions advanced than I offered in my paper, suppressing some arguments in my desire to be brief. A part of this evidence I put in another report made by me to the Committee on Hygiene of the Philadelphia County Medical Society.<sup>1</sup> It is as follows: In that part of the city known formerly as the "city proper"—the old corporate limits of the city, extending from the river Delaware to the river Schuylkill, and embracing an area of two and a quarter square miles, now inhabited by 130,000 souls—there occurred, during the year 1876, thirty-four deaths from typhoid fever. This is the wealthiest section of the city, and better supplied with sewers than any other. Now, how were the houses situated in which these deaths took place? Were they strung along the streets tunnelled by the sewers, as undoubtedly they should have been if the gases from these were the death-bringing agents? Not at all. Only ten of the fatal cases occurred in dwellings to which connections with the sewers were possible, while the rest, more than two-thirds, were found in houses bordering upon streets in which these large drains were absent. Even supposing that all the habitations in the first class had improved their opportunity by making sewer connections, which is by no means probable, and that the fatal poison reached them through these channels, still the causation of more than two-thirds of the cases ending in death remains yet to be explained. This, it seems to me, Mr. President, is an unanswerable argument against the

<sup>1</sup> Report on the Relations of the Drainage and Sewerage of Philadelphia to the Prevalence of Typhoid Fever in that City.—Med. and Surg. Reporter, October 27, 1877, Philadelphia.

postulate that sewer gas is an important factor in the causation of typhoid fever in Philadelphia.

But I will ask further, were the emanations from our sewers so prone to be loaded with the poison of typhoid fever, should we not have had a much more extended epidemic of that disease in the Centennial year? The intense heat of the summer, a lack of the accustomed rain-fall in August to flush the sewers, the poison more rife than usual among us: with these conditions, should not the houses draining into the sewers have been fearfully afflicted? For I take it for granted that the plumbing is so defective, as a rule, in all our houses, that no immunity can be claimed on account of well appointed traps. In corroboration of this assumption, I would point to what has lately been discovered by an examination of the drainage of the dwellings in Edinburgh. There has been formed in that city, as you have doubtless seen mentioned in the journals, a society, the aim of which is to insure effective house sanitation. In the first report of their inspector upon the condition of eighty-five houses, seventy-five were declared to be more or less defective in their drainage service. Now, if in Edinburgh, where I take it the contents of the sewers are much more likely to prove obnoxious than our own, from their more general use as a receptacle of excrement, such a state of affairs was found to exist, why should we expect better things of Philadelphia?

Before taking my seat, I wish to bring forward, with regard to the special causation of the cases of typhoid fever laid before us this evening by Dr. Keating, a point, touched upon indeed by the doctor, but worthy, I think, of more extended consideration.

If I understood him aright, the characteristic eruption of typhoid fever appeared upon the first patient attacked on the tenth day after her return to her house from her absence of several months in the country. No one will dispute that this symptom makes its appearance at the end of the first week of the disease, or more usually in the first half of the second week. Therefore in this patient the fever must have begun to develop immediately on her return home, or, at most, after a lapse of but two or three days. But Liebermeister, a most excellent authority, gives the average period of incubation in typhoid fever as three weeks.<sup>1</sup>

<sup>1</sup> Cyclopaedia of the Practice of Medicine, Ziemssen, Art. Typhoid Fever, vol. i., pp. 55-56. Am. ed., Wm. Wood & Co., New York.

How exceptional then must be the case in which this period is encompassed in at most three days, as we must estimate, if we trace its origin to the conditions of the dwelling-house! It seems to me certainly that we shall be on the side of greater probability if we believe that the unfortunate patient contracted the disease before her arrival in Philadelphia, either at the inns at which she stopped or even while on the way. As regards the later cases, I would place them as secondary to this first case, and due to the infection of the house drains by the evacuations of the patient, for vigorous antiseptic measures appear not to have been practised in the first days of her disease.

In conclusion, I would ask not to be understood as opposing the idea that typhoid fever may arise from the escape of sewer gases into dwellings, and I did not deny this in the report to which Dr. Keating has referred, but simply as declaring that the fact seems to me well made out that these sewer gases are not a prominent cause of typhoid fever in Philadelphia.



CASES OF HEPATIC ABSCESS;  
WITH REMARKS UPON THE VARIETIES, ETIOLOGY, AND DIAGNOSIS  
OF THE DISEASE.

By  
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[Read February 5, 1879.]

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IN his work on "Diseases of the Liver," Dr. Murchison divides hepatic abscesses into two classes, viz., the *Pyæmic* and the *Tropical*. In the first are placed those cases which originate from external injuries and surgical operations, from ulcerations of the stomach, intestinal canal, gall bladder, or bile-ducts, or from any other source of purulent absorption, and in which the abscesses are small and numerous. It includes, in general terms, all cases occurring in temperate climates, and also those which occur in hot climates as a result of dysentery.

The second class embraces those which originate in tropical climates, in which the suppuration cannot be ascribed to dysentery, to a pyæmic source, or to mechanical violence, and in which it is exceptional to find more than one large abscess.

Though this classification is in opposition to the theory of Budd, which refers all hepatic abscesses,

not due to external injury, to purulent infection of the radicles of the portal vein, resulting from ulceration of the gastro-intestinal canal or bile-ducts, the frequent existence of a distinct variety of abscess in tropical countries is established by facts adduced by Frerichs, Morehead, Waring, and other authorities. For example, of 204 cases of abscess of the liver, collected by Waring, there were no intestinal ulcerations, cicatrices, or abrasions—in other words, no source of pyæmic infection—in 51, exactly one-fourth. This form, the tropical abscess, is attributed to a chill taking place in a person whose liver has been congested by residence in a hot climate, aided by exposure to malaria and by irritating ingesta, and is the result of an acute, idiopathic inflammation of the hepatic tissue.

The chief distinction between the two classes would seem to be an etiological one, for, while in typical examples of either group the symptoms and physical signs are somewhat different, there are other cases where they are identical. Such is the fact also, according to my limited experience, in regard to the anatomical conditions, the distinction founded upon the large size, the small number (from one to three), and the tendency of tropical abscesses to burst externally, or into the pleura, lung, or intestinal canal, as contrasted with the opposite characters of pyæmic abscesses, being not always observable.

The following cases tend to prove the truth of these statements, and, at the same time, illustrate the clinical features and the pathology of pyæmic abscesses of the liver.

CASE I<sup>1</sup>.—Henry —, aet. 42 years, a railroad hand, of moderately temperate habits, was admitted to the medical ward of the Episcopal Hospital on November 15th, 1878. He was an Englishman by birth, but had lived in Philadelphia a number of years. He had never been in the tropics. His family record was good. He had never had any manifestations of constitutional syphilis, and, with the exception of an attack of typhus fever when quite a lad, had enjoyed fair health up to twenty-four days before admission. At this time, without any assignable cause other than the exposure incident to his occupation, he began to suffer from pain in the right hypochondrium, sometimes extending to the left side, or through the body toward the spine, and he noticed that there was a circumscribed projection of the abdominal wall, a short distance below and to the right of the ensiform cartilage. The pain was paroxysmal and cramp-like in character, was partially relieved by pressure, and was severe enough to force him to quit work. Having rested for two days, he considered himself sufficiently well to return to duty, but, soon after doing so, was seized with a chill followed by fever and sweating. Subsequently a similar attack occurred at about the same hour, every other day, and he commenced to lose flesh and strength, his appetite failed, and he vomited occasionally after eating. The abdominal tumor, meanwhile, slowly increased in size. Four days before entering the hospital, diarrhoea set in; the passages were described as liquid, dark-colored, and offensive.

When admitted, the patient was very feeble, and, although not noticeably emaciated, he had, according to his own statement, lost much flesh. His face had the ruddiness common to his countrymen, but his skin generally was pale, and the conjunctivæ slightly yellow. His tongue was smooth and red at the edges, and covered with a thick yellow coating in the centre. He had little appetite, increased thirst, and

<sup>1</sup> The clinical histories of Cases I and II have been compiled from the ward notes of Drs. Anders and D. J. M. Miller, Resident Physicians of the Episcopal Hospital.

diarrhœa. The evacuations took place at short intervals, were attended with the expulsion of much flatus, and were scanty, liquid, and brown in color, and contained a small quantity of mucus and blood. There was slight uniform distension of the abdomen, the superficial veins on the right side were moderately dilated, and in the epigastrium, a short distance below the margin of the ribs and to the right of the median line, there was an oval tumor, having its long diameter nearly parallel to the costal border. The tumor projected an inch beyond the surrounding surface, and measured three inches in length by an inch and a half in width. It seemed to be superficial, the skin covering it was movable and normal in appearance, an indistinct sense of elasticity was obtained on palpation, and percussion was dull. It was tender to the touch, and was the seat of constant, sharp pain.

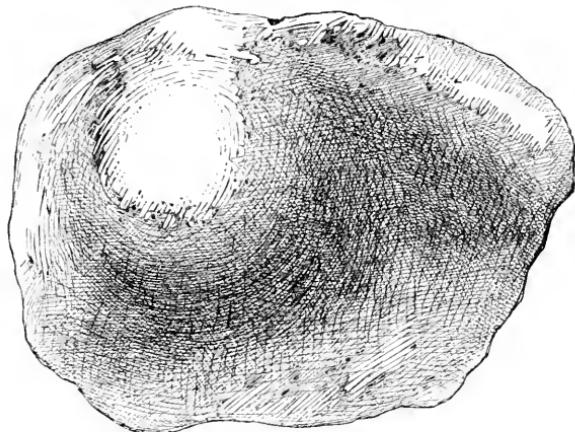
The dulness of the right lobe of the liver began at the inferior edge of the fifth rib, and extended in the mammary line about an inch below the costal border, not quite so far down as the lower edge of the tumor, though continuous with it laterally. The area of the left lobe was increased to some extent in a downward direction. The margin of the liver could not be distinctly felt. The patient had a trifling cough, expectorated a little frothy mucus, and, upon examining the chest, the physical signs of catarrh of the larger bronchial tubes were detected. The pulse beat 84 times per minute and was lacking in force; there was no cardiac murmur, but the apex beat was altered in position, being situated directly under the left nipple in the fourth interspace. The urine was normal in quantity, high colored, acid, had a sp. gr. of 1.018, and contained an increased amount of indican.

For the first eighteen days of his stay in the hospital, the patient had, at intervals corresponding very nearly with those of tertian intermittent fever, well marked chills, followed by fever and profuse sweating. The tumor grew more superficial and slowly increased in size, the pain became throbbing in character and more severe, and the sensation of elasticity on palpation was converted into one of indistinct

fluctuation. The general symptoms remained unchanged, the dysenteric evacuations continuing, and the prostration becoming more marked, particularly after the chills, when it was often very great.

By December 4, the conjunctivæ had become decidedly yellow and the skin slightly jaundiced. The tongue had lost much of its coating and was smooth, red, and dry. There was slight cough, and the evidences of hypostatic congestion of the posterior portions of both lungs, dependent upon the almost constant dorsal decubitus, were noticed. The tumor, or more accurately the *abscess*, had assumed a spherical outline; extended about an inch to the left of the median line; measured from side to side, across the summit, six and a half inches; and pushed the costal margin upward and outward. Its appearances are shown in Fig. 1, from a drawing by Dr. J. M. Taylor.

FIG. 1.



The investing skin, although tense, was still normal in color, and freely movable, except over a spot as large as a silver dollar, near the left edge, where it was partially adherent. Fluctuation was well marked and very superficial, especially at the point of adhesion. There was less tenderness on manipulation over the seat of the abscess than formerly, but

more along the costal border, so that it was difficult to fix the exact position of the lower edge of the right lobe of the liver. As far as could be discovered, however, it occupied the same situation as at the first examination, the percussion dulness extending little more than one inch below the margin of the ribs, while that of the abscess extended at least four. The pulsations of the abdominal aorta were visibly transmitted to the abscess. In addition to the throbbing pain the patient complained of a feeling of distension in the right hypochondriac region, and was much annoyed and weakened by the frequent calls to evacuate the bowels.

On December 5, after freezing the skin at the point of adhesion, a medium-sized aspirator canula was introduced by my colleague, Dr. Packard. A small quantity of pus only was withdrawn, when the canula became obstructed, and, remaining so in spite of every effort to the contrary, was removed, a probe-pointed bistoury being inserted, through the puncture, and an incision made one-third of an inch in length. Through this nearly four ounces of bloody pus, containing small shreds of broken down tissue, escaped. When a few drops of this pus and a small quantity of fuming nitric acid were placed separately upon a porcelain plate and allowed slowly to run together, a faint play of colors was observed, such as is seen when liquids containing biliary coloring matter are similarly treated. A microscopical examination was also made by Dr. J. H. C. Simes, who reported as follows: "The material removed from the abscess contains a few pus corpuscles and numerous granules and cells. The latter are irregular in shape, a few being angular; they are very granular and contain an indistinct round nucleus; some large spherical cells are seen containing several small oil globules. Free oil drops are also found."

The operation was attended by but little pain, and by no unfavorable symptoms. On the following day, December 6, the patient expressed himself as being much more comfortable, the sensation of distension having entirely disappeared, and the throbbing pain being much less severe. The projec-

tion of the abdominal wall was greatly diminished, and purulent matter flowed freely from the small opening, the discharge being most profuse upon changing the position in bed from the back to the left side. The pulse was stronger, the tongue more moist and natural in appearance, the appetite somewhat improved, and the bowels not nearly so frequently moved.

On December 8, the skin and conjunctivæ seemed to be decidedly less jaundiced. There was no pain whatever in the abscess and no projection of the abdominal wall. The bowels were again very loose, the passages having the same character as before and being attended with tenesmus. There was, too, occasional vomiting, lowness of spirits, restless sleep, and slight rigors with copious sweating, though no distinct chills. The vomiting was completely checked by noon on December 9, and the bowels were much better. The improvement continued on the 10th, and was still more marked on the 11th, 12th, and 13th, the evacuations numbering only from one to four a day and being unattended by tenesmus. During this interval the skin and conjunctivæ became natural in color, but the prostration increased, little food was taken, sleep was broken, and there were rigors and profuse sweating. The abscess still discharged freely, the material being thinner and showing under the microscope a greater number of pus corpuscles than before; the contained masses of disorganized tissue were larger but less numerous, were yellow in color and firm, and sometimes blocked up the opening. A probe could be introduced easily and without giving any pain, two inches and a half vertically and three inches in an upward direction or to the right; to the left it struck against a smooth, dense surface, and the contact caused pain. The pulsations of the abdominal aorta were no longer visibly transmitted. No alteration could be detected in the situation of the lower border of the liver dulness or in that of the abscess.

On the 14th, 16th, 18th, and 20th of December, chills occurred. The first and third began at about 6 o'clock P.M., and were very severe; the other two took place at 2 o'clock

P. M., and were much milder. Each chill was followed by fever, sweating and purging, the intensity of all three symptoms corresponding with the grade of the chill. On the intervening days the stools, while unchanged in character, were very much reduced in number, and the general condition was about the same as it had been during the preceding week. After the recurrence of the chills, however, there was a steady failure in strength and an equally rapid wasting in flesh. Death occurred suddenly on December 22, being apparently consequent upon the slight exertion incident to an evacuation of the bowels.

Throughout the course of the disease, the temperature taken in the axilla, while rather irregular, ranged, as a rule, from 98.5° or 99° F. in the morning, to 101° or 101.5° in the evening; upon four occasions, after a chill, it rose to 104°, and upon three, to 105°. Each of these elevations happened in the evening, and was of short duration, the thermometer, when the following morning observation was made, registering 98° or 98.5°. The pulse varied from 96 beats in the minute in the morning, to 108 in the evening; at periods corresponding to the marked elevations in temperature, it rose to 120, and throughout the pyrexia of the 14th and of the 16th of December it counted 140 and 148.

The general treatment was essentially supporting and symptomatic. The patient was kept as quiet as possible. Milk and meat broths formed the basis of his diet, and alcoholic stimulants were employed, at first in small quantities, but subsequently in larger and larger amounts, as the increasing prostration seemed to demand, six fluidounces of whiskey in twenty-four hours being the maximum. Opium suppositories were used to lessen the number of stools, to relieve the tenesmus, and to procure sleep. Quinia was administered in moderate doses (gr. viij to xvj per diem), more with the idea of maintaining the strength than for any effect it might have upon the pyæmic chills. After the sweating became profuse, aromatic sulphuric acid was combined with the quinia. This had little effect, the sweating

being more influenced, though by no means controlled, by sulphate of atropia, which was used during the last week of the disease,  $\frac{1}{6}$  of a grain being administered, in solution, by the mouth, several hours before the expected onset of the sweating, this generally taking place in the night. For four days after entering the hospital, a belladonna plaster was applied over the abscess; a flax-seed poultice was then substituted, and continuously employed up to the date of death.

An *autopsy* was made eight hours after death. The incision through which the discharge had taken place during life was first enlarged, and found to lead directly into the cavity of an abscess, the greater part of which was formed by a cup-shaped depression in the substance of the right lobe of the liver. This depression was semi-circular in outline, measured two inches in diameter, an inch and a half in depth, and was situated one inch from the lower margin of the lobe, and scarcely half an inch to the right of the suspensory ligament. Its surface was rough, and partially covered with a yellow fibrinous material. Completely surrounding the depression, and coming close to its edge, there was a band of adhesion, nearly an inch wide, firmly binding the peritoneum investing the abdominal muscles and diaphragm to the surface of the liver. The anterior wall of the abscess was formed by the area of opaque, thick and somewhat rough parietal peritoneum, embraced by this ring of adhesion. The puncture had been made very near to the left edge of the cavity, and it was the smooth surface of the liver that had been felt upon passing the probe in this direction. The abscess contained about a fluidounce of thick pus.

Upon further dissection the liver was observed to be enlarged. The right lobe extended, in the mammary line, from the upper edge of the fourth rib to a point an inch and a half below the costal border, and at the position of the abscess four inches below. The lower edge of the lobe was

very nearly on a line with the upper margins of the umbilical and right lumbar regions, and formed an angle of  $45^{\circ}$  with the costal border. The notch between the right and left lobes was situated half an inch to the left of the median line. The left lobe was not much increased in size, but on account of the enlargement of its fellow, extended somewhat farther to the left than normal. Except in the position already mentioned, the surface of the liver was free from adhesions.

On removing the organ, fluctuation was felt over the posterior portion of the right lobe, and pressure in this position caused pus to flow freely from one of the larger branches of the right hepatic vein. Upon making an incision, probably two pints of odorless, creamy pus, containing small yellow masses of broken down tissue, were evacuated from a large abscess. This abscess was similar in shape to the right lobe, being deeper posteriorly than anteriorly; it measured six inches in its antero-posterior, and five inches in its transverse diameter, and posteriorly and inferiorly approached within half an inch of the surface. Its walls were formed of softened hepatic tissue, hanging in shreds into the interior. A probe could be readily passed along the hepatic vein, through which the pus escaped, into the cavity of the abscess; the interior of the vessel was covered with a moderately thick, yellowish, tightly adherent deposit, considerably lessening its calibre. On the convexity of the left lobe, near the suspensory ligament, there was another abscess, detected by a slight prominence of the surface; this was as large as an English walnut, oval in shape, lined with a smooth membrane, and filled with thick, bile-stained pus. There was no communication between the two abscesses in the right lobe. The uninvolved portions of the hepatic tissue appeared to be healthy, though on section blood ran freely from the cut surfaces. The gall bladder was normal in size, and contained a small quantity of healthy bile; the ducts were patulous. The liver, after the evacuation of the larger abscesses, weighed five pounds and a half. The spleen was enlarged to nearly three times its ordinary dimensions, and was soft and filled with dark blood.

The mucous membrane of the *stomach*, and of the lower third of the *ileum*, was congested. The mucous membrane of the *large intestine*, from the cæcum to the sigmoid flexure, presented numerous points of ulceration, varying from an eighth to three-fourths of an inch in diameter. The smaller ulcers were circular in outline, the larger irregular, being apparently formed by the coalescence of several smaller ones. Their edges were thickened and undermined, and their bases were formed, for the most part, by the muscular layer of the intestine, although many of those in the cæcum extended as far as the serous layer. The ulcers were scattered indifferently over the surface of the mucous membrane, were largest and most numerous in the ascending colon, just above the ileo-cæcal valve, and gradually became smaller and less numerous as the lower part of the descending colon was approached; in the sigmoid flexure there were very few, and none at all in the rectum. The bases of some of the ulcers in the descending colon, and of nearly all of those in the sigmoid flexure, were covered with a yellowish, readily broken down material; these ulcers had neither undermined nor thickened edges, and were probably in the process of formation.

In the lower part of the transverse colon there were some ulcers that seemed to hold an intermediate position in point of age between the chronic ulcers at the cæcal extremity of the canal, and the forming ones below. The mucous membrane between the ulcers was thickened and congested. The right side of the ascending colon, directly above the cæcum, was firmly bound, over an area an inch or more in diameter, to the peritoneum covering the iliacus muscle. The adhesions were old, and involved the vermiform appendix. When a probe was introduced into the intestinal orifice of the latter, it readily passed out at its lower end into a small cavity, completely limited by the adhesions, and containing about a fluidrachm of thick purulent matter.

The *kidneys* were large, and exhibited some of the characters of commencing cirrhotic change. The abdominal cavity con-

tained a small amount of clear serous fluid. The ascending cava was filled with partially coagulated blood, mixed with pus; the interior of the vessel showed no alteration. The cardiac tissue was soft, and readily torn. The posterior portions of both lungs were congested. No metastatic abscesses could be discovered.

Instead of uniformly presenting such a characteristic group of symptoms and physical signs as the foregoing case, there are many instances where the hepatic disease is either latent or masked by concurrent affections. Thus, according to the statistics of Louis, perfect latency is observed in 13 per cent., and in only 8 per cent. are the symptoms at all well marked.

Of these obscure cases the following is an example:—

CASE II.—M. S., at. 57 years, by trade a shoemaker, of moderately temperate habits, was admitted to the Episcopal Hospital on October 31, 1878. He was a native of Germany, but had made his home in Philadelphia for a long time. He had never lived in the tropics. His family history was healthy. He denied ever having had syphilis. In 1862, while in the army, he had intermittent fever, and in 1867 he had "brain fever," since which time, with the exception of an occasional bronchial catarrh, his health had been good. The illness for which he entered the hospital began on October 21, without any appreciable cause, being ushered in by a heavy chill, followed by headache, thirst, general debility, and, what attracted his attention most, a sharp stitch-like pain in the region of the liver. Subsequently rigors occurred every day, the bowels were obstinately constipated, and the loss of strength progressive.

On admission there was considerable emaciation with slight œdema of the feet and ankles. The conjunctivæ were unusually pearly, the skin sallow, but not jaundiced. The

surface of the tongue had lost its velvety appearance, and was smooth and red. There were increased thirst, anorexia, and constipation, and complaints were made of pain beneath the right costal border, increased by deep inspiration or by movements of the body. The abdomen was somewhat distended, the right side being more prominent than the left. There was tenderness on palpation over the right side, and the lightest touch of the finger caused the abdominal muscles to contract rigidly; the tenderness was most marked in the epigastrium and right hypochondrium, and these regions seemed to be occupied by a solid tumor. Percussion was dull over this tumor, the dulness being continuous with that of the right lobe of the liver; over the rest of the abdomen the percussion note was tympanitic. The liver dulness on the right side anteriorly began at the fifth intercostal space. The left lobe was apparently not enlarged. The right costal border was more prominent and a little more elevated than the left. There was a deep depression of the lower part of the sternum, caused by the pressure of the "last" in capping. The respiratory movements numbered about 18 per minute, and were of the costal type; no pulmonary lesion could be detected. The pulse was 84, small and feeble, and the cardiac first-sound weak. The surface temperature ranged from 99° to 100° F. The urine was voided freely, and had a low specific gravity, 1.010, though otherwise normal.

From October 31 to November 5, there was little change in the patient's condition, beyond the disappearance of the oedema, and a slight diminution of the tenderness and the irritability of the abdominal muscles, not sufficient, however, to admit of an accurate localization of the lower margin of the enlarged right lobe of the liver. The bowels remained constipated, the stools obtained by laxatives being formed, and very light, almost clay colored. On November 5, the patient was restless, had pain in the right side of the chest, and cough, with a scanty mucous expectoration. The temperature was higher, ranging from 100° to 102°; the pulse

was increased to 108, and the respiration to 28 per minute. The physical signs of slight general bronchitis and right-side pleurisy with commencing effusion were present.

On November 7, the plenritic pain had disappeared, and the cough was more productive, the sputa having a yellow tinge. The breathing was more frequent, 32 in a minute, and there was an occasional paroxysm of dyspnoea. The movements of the right side of the chest were restricted, the lower intercostal depressions were less marked than on the opposite side, and the semi-circumference, on the line of the sixth rib, was three-fourths of an inch greater. In the sitting posture there were flatness and diminished elasticity from the middle of the scapula downward, posteriorly, and from the fourth rib downward, anteriorly, the level of flatness varying considerably with change in position. Over this area the respiratory murmur was feeble, except posteriorly along the vertebral gutter, where it was broncho-vesicular; and the vocal fremitus was lessened, and the vocal resonance somewhat ægophonic. At the upper part of the chest the percussion resonance had a tympanitic quality, the respiration was puerile, and there were a few bronchial râles. Over the left lung posteriorly coarse bronchial râles were heard, but otherwise the signs were normal. The apex beat of the heart was situated in the fifth left interspace, directly on the nipple line. The general symptoms and the condition of the abdomen remained unaltered.

From the 7th to the 22d of November the loss of flesh and strength steadily continued. The temperature kept at about the same elevation, and sometimes in the afternoon the face grew flushed, and there was slight perspiration. The pulse was still more frequent, oscillating between 108 and 120 beats a minute. The respiration, on the other hand, became no faster, indeed the paroxysms of dyspnoea occurred at longer intervals, and were shorter in duration; the cough also was less troublesome, and the expectoration was more free and muco-purulent. The amount of fluid increased slightly during the first two or three days of the interval,

but afterward remained stationary. Little food was taken, the bowels were opened spontaneously once or twice daily, and on the 14th there was some diarrhoea. The abdominal pain disappeared almost entirely, and the tenderness on pressure decreased. The decubitus was dorsal; sleep was disturbed and unrefreshing.

On November 23, the diarrhoea returned, the stools numbering about five in twenty-four hours, and being liquid, light-yellow in color, and containing some mucus. On the 24th, 25th, and 26th, the appetite and sleep were better, and there was some general improvement, though the diarrhoea continued. By the 27th the abdominal tenderness was much less marked, and the lower margin of the liver could be mapped out. The left lobe extended about the usual distance below the costal border; the right occupied the epigastric, the right hypochondriac, and the upper halves of the umbilical and right lumbar regions. The surface was perfectly smooth; the edge could not be distinctly felt on account of the pain produced by deep pressure. The remainder of the abdomen was tympanitic.

During the next fortnight the patient slept well, and took a moderate quantity of food, but gained neither flesh nor strength. The bowels continued loose. The abdominal tenderness almost disappeared, so that the firm, thickened edge of the right lobe could be distinctly felt. The level of the pleuritic effusion fell about an inch, the bronchial râles disappeared, the cough and expectoration ceased, and, although the breathing was still quick, 24 to 28, there was more movement of the abdominal muscles, and no more attacks of dyspnoea occurred. The temperature ranged from 99° to 101°, and the pulse from 116 to 120.

After December 15, the appetite failed and the patient passed into an asthenic condition. While sometimes for several days together the bowels were only moved once or twice daily, the evacuations were liquid and contained blood and mucus, and there was a constant tendency to excessive purgation. No change took place in the physi-

eal condition of the chest or abdomen. The temperature was very regular, 99° in the morning and 100° in the evening, the pulse counted from 108 to 116, and the respiration about 28. Edema reappeared in the feet and legs as high as the knees, and the urine was again tested with negative results. Death took place on January 5, 1879.

Throughout the course of his illness, the patient was kept perfectly quiet in bed. The diet consisted of milk and farinaceous preparations, beef-tea, and meat broths. Sulphate of quinia, whiskey in moderate doses, and subsequently carbonate of ammonium, were employed to maintain the failing strength, and opium was used to keep the diarrhoea in check. Sedative applications were made to the right side of the abdomen, and counter-irritant applications to the right side of the chest.

A *post-mortem* examination was made by the resident physician, Dr. D. J. M. Miller, twenty-four hours after death. On opening the abdomen, the fissure between the right and left lobes of the liver was observed to be situated about an inch to the left of the median line. From this position the lower edge of the right lobe, which was smooth and thickened, descended somewhat obliquely to the umbilicus, and thence directly across the abdomen to the right side, the upper edge extending as high as the fourth intercostal space. The left lobe was displaced an inch or more to the left, its upper margin was at the fifth interspace, and its lower was barely visible below the costal border. The fundus of the gall bladder was directly under the umbilicus. The upper right postero-lateral surface of the right lobe was firmly adherent to the under surface of the diaphragm and the abdominal wall, while the inferior surface of the lobe was attached to the right kidney and the transverse colon.

Upon attempting to break up the adhesions in the latter position in order to remove the organ, the glandular tissue was torn, and a quantity of pus welled up, and was easily traced to its source in a large abscess. This abscess occupied

three-fourths of the right lobe, resembled it in shape, and contained, as nearly as could be measured, five pints of inodorous, creamy pus. The postero-lateral portion of its wall was scarcely thicker than writing paper, being formed only by the thickened capsule, and was also torn in removing the viscous; the upper portion of the wall was a quarter of an inch and the lower half an inch in thickness. The internal surface, though irregular, was smooth, and lined with yellow fibrous material. A small branch of both the portal and hepatic veins communicated with the abscess; the former was filled up to the point at which it joined a larger branch by a recently-formed soft clot; on the interior of the latter there was a fibrinous deposit, and it contained a small quantity of pus. On the under surface of the left lobe, near the anterior edge, there was a small forming abscess as large as a filbert, and round in shape. The hepatic tissue was apparently fatty. There were no gall stones, nor could any lesion of the gall bladder or ducts be discovered. The liver, after the evacuation of the abscess, weighed four and a half pounds.

The *intestines* were displaced downwards and to the left, and there were numerous moderately firm adhesions of the knuckles with each other, with the neighboring viscera, and with the abdominal walls; these adhesions were firmest on the right side, between the cæcum and ascending colon, and the peritoneum investing the iliac fossa and the right side of the abdominal cavity. The mucous membrane of the small intestine showed no particular alteration. The mucous membrane of the large intestine, from the ileo-cæcal valve to the beginning of the rectum, was extensively ulcerated. The ulcers varied much in size, some being no larger than a pin's head, while others measured two inches in length by an inch in breadth. The smaller were round, the larger irregular in outline with their long diameters parallel with the axis of the gut; the edges of some were thickened and cleanly cut, of others thin and rather ragged; the floors of the first were smooth, those of the second variety covered with a yellowish, readily broken down material; the loss of substance extended,

as a rule, only as far as the muscular layer. The ulcers were not confined to any special portion of the mucous membrane, but were most numerous, largest, and most chronic, in the cæcum and ascending and transverse portions of the colon, and deepest in the cæcum; in the descending colon and below, the ulcers were chiefly of the second variety, but the latter were not limited to these positions, a few being scattered among the chronic ulcers above. The intermediate mucous membrane was much thickened. The epiploic appendages were very prominent, and upon the external surface of the intestine there were several isolated patches of congestion over the more recent ulcers.

The *spleen* weighed five ounces, and was normal in appearance. The *kidneys* weighed together twelve ounces, and presented some of the appearances observed in the "large white kidney." The parietal *peritoneum* was thickened, and there was a small quantity of serous fluid in the peritoneal cavity. The right *pleural cavity* contained about three pints of serous fluid, and the diaphragmatic and costal pleurae were thickened. There were a few old adhesions at the apex of the right lung, and the lower lobe was compressed. There were some firm adhesions over the surface of the left lung. The *pericardium* was adherent in two or three places; there were several small patches of atheroma in the aorta just above the valve, and the cardiac tissue was flaccid.

When this patient came under observation, the pain beneath the right costal border, with the enlargement of the right lobe, indicated an affection of the liver, and the tenderness a circumscribed peritonitis; subsequently the clinical characters were mainly those of the secondary pleuritis, and no definite opinion as to the hepatic disease could be formed during life, though its inflammatory character was suspected from the nature of the complications. In two other cases which have come directly under my observation, the

symptoms were imperfectly developed in one, and entirely latent in the other.

CASE III.<sup>1</sup>—This case occurred in 1875; the patient was a boy, five years of age. The cause could not be satisfactorily established. The symptoms which ushered in the attack were those of mild gastro-intestinal irritation, and were fully accounted for by the presence of lumbrixi, numbers of which were passed under appropriate treatment. The symptoms of the attack were exclusively local, and chiefly objective. The abscess pointed in the right hypochondrium, was evacuated through a small puncture, and complete recovery resulted.

CASE IV.<sup>2</sup>—The other case was that of a man fifty-eight years of age, who died in the surgical ward of the Episcopal Hospital, in January, 1878, during the first few days of the service of Dr. Forbes, for whom I made the *post-mortem* examination. An operation had been performed three months before by Dr. Packard, for the removal of a tumor from the parotid region. This was followed by an attack of pneumonia, involving the lower lobe of the right lung. The pyrexia was rather slow in subsiding, the lung never entirely cleared up, and for the last three weeks of life the expectoration was rather abundant, slightly offensive, and purulent, but there were never any symptoms indicative of hepatic disease. At the *autopsy* a large abscess was found, situated at the upper, posterior portion of the right lobe of the liver, and opening, through the pulmonary tissue, into one of the larger bronchial tubes.

While Cases I and II have very different clinical histories, they exhibited similar morbid appearances, and probably depended upon identical causes. Al-

<sup>1</sup> Reported in the Transactions of the College of Physicians of Philadelphia, Third Series, vol. ii.

<sup>2</sup> Philadelphia Medical Times, June 22, 1878.

though in Case I no history of diarrhoea or intestinal disorder, preceding the appearance of the abdominal tumor, could be elicited, and though in Case II the bowels were constipated for some time after the patient came under observation, there can be little doubt that the intestinal lesions revealed by the post-mortem examinations antedated and gave rise to the hepatic abscesses. The principal proof of this lies in the conditions presented by the intestinal mucous membranes. There were evidently, in both cases, two crops of ulcers, the majority, especially those toward the cæcal extremities of the canals, being chronic; while those in the sigmoid flexures were either recently formed, or in the process of formation. To the former I attribute the hepatic abscesses, to the latter the frequent and characteristic evacuations of the bowels, which occurred after entering the hospital.

The fact of the complete absence of primary intestinal symptoms in the first case, is perhaps questionable, considering the early existence of diarrhoea, as well as the difficulty of obtaining an accurate preliminary history, and the tendency of patients, particularly those belonging to the lower classes, to disregard or forget symptoms which do not cause actual suffering or prevent work. But even supposing that diarrhoea really was absent until after the abscess had progressed so far as to be manifest by local signs, there is little reason, on this account, to regard the intestinal ulceration as of later origin than the hepatic disease; for it not unfrequently happens that intestinal ulceration is unattended by diarrhoea, especially when the ulcers are seated in or immediately about the cæcum. It is also true, that the

nearer the ulcers approach the lower portion of the bowel, the more likely is this symptom to occur. Now in this case, the oldest ulcers were situated in the cæcum, the most recent in the sigmoid flexure, a distribution that accounts equally well for the early absence and the subsequent occurrence of diarrhœa. There is likewise a greater liability to diarrhœa when the surface involved in the ulceration is large, and still more when there is extensive catarrh of the mucous membrane of the intestine—conditions belonging to an advanced stage of disease. In the same way the constipation and purgation, noted in the second case, may be explained.

If, on the contrary, the ulcers of the large intestines are considered as secondary to the abscesses, there is only one way in which their production can be explained, and that is by the transmission of some irritant matter, as pus or altered bile, through the bile-duets to the intestines; and if this were the fact, it is difficult to account for the entire escape of the small intestines, unless by the rapid transit of the intestinal contents from the stomach to the ileo-cæcal valve, and the greater delay in the colon, the rather forced explanation suggested by Annesley.

Since no metastatic abscesses could be found in the lungs, spleen, or kidneys, in either of these two cases, the communication between the hepatic vein and abscess in the one, and the portal and hepatic veins in the other, must have taken place a very short time before death; indeed, in the former it may have been produced by the handling necessary in removing the liver.

Both of these cases, as well as the surgical case

referred to, presented, as far as the liver was concerned, morbid appearances very similar to those stated to be observed in tropical abscesses; it is probable that such exceptions to the rule of multiple and small abscesses in pyæmic cases, are more frequently met with in medical than in surgical practice.

The diagnostic features of pyæmic abscesses of the liver, as met with by the physician, may be considered under two heads—the *rational symptoms*, including the general and local symptoms, and the *physical signs*. The *rational symptoms* are jaundice, varying considerably in intensity; emaciation; progressive prostration; rigors or chills, showing a tendency to assume an intermittent type; pyrexia; profuse sweating; a red and glazed tongue; infrequent vomiting; diarrhoea, with evacuations containing small masses of mucus and blood, indicative of ulceration of the large intestine; and a sense of distension and pain in the region of the liver, the pain being often increased by coughing, or by a deep inspiration. The *physical signs* vary considerably with the number and size, and the position and course, of the abscesses. When multiple and small, they show no disposition to point, and the signs are those of moderate enlargement of the liver, with tenderness on manipulation. When there is but one or, at most, two or three large collections of pus, the opposite tendency is observed in regard to pointing, and the signs are the same as in tropical abscesses. Thus, if there be a large abscess situated in the posterior portion of the right lobe—the usual situation—in addition to enlargement and tenderness over the liver, the intercostal spaces will be effaced, and the ribs elevated and pushed outward. If

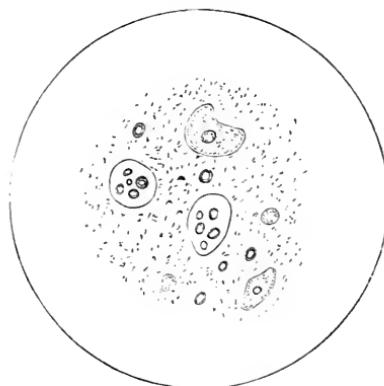
the abscess point below the margin of the ribs—the direction taken when seated upon the convex surface anteriorly—the signs will be still more complete, for together with the above there will be great, often irregular, enlargement in a downward direction, and a tumor, at first ill-defined and firm, afterward more prominent and fluctuating. The skin covering this tumor is, in the beginning, quite movable, and sometimes œdematous; subsequently it becomes adherent over a limited area, and reddened, the adhesions being preparatory to the discharge of the contents of the abscess. It is apparent, therefore, that it is only in the last condition (which, by the way, is rather an unusual one), that the signs are at all peculiar.

Of the two sets of clinical characters, the physical signs are by far the more valuable for diagnostic purposes, and when well developed, and especially if attended by the rational symptoms, the disease can be readily detected. But since, as already indicated, it is unusual for the abscess, even when single and large, to be so situated as to give rise to specific signs, and since the rational symptoms are so often latent or masked, the frequency with which the disease escapes discovery until inspection after death, is easily explained. In some cases, though an abscess can be detected in the hepatic region by manual exploration, uncertainty may be felt in regard to its connection with the liver, on account of the signs or symptoms being imperfectly developed; in such doubtful instances, important information may be obtained by a microscopic examination of a portion of the contents.<sup>1</sup>

<sup>1</sup> Dr. Fenwick, *Lancet*, Nov. 17, 1878, cites a number of cases illustrating the diagnostic, as well as prognostic, importance of such an examination, but does not minutely describe the microscopical appearances.

In the case of the boy already mentioned (Case III), the material removed by the aspirator contained "pus cells, compound granule cells, blood corpuscles, and numerous polygonal cells, having well defined nuclei, and resembling liver cells." The peculiar cells found in the pus obtained from the incised abscess in Case I, are seen in Fig. 2, from a drawing by Dr. Simes.

FIG. 2.



× 250

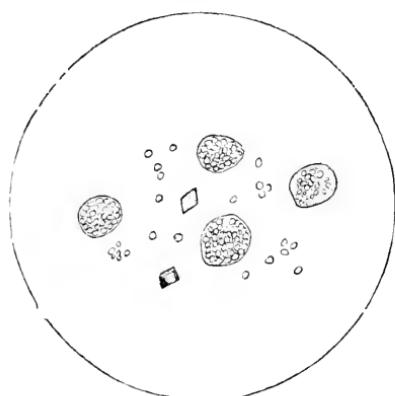
Fig. 3, also from a drawing by Dr. Simes, shows the cells and crystals of bilirubin found in a portion of the pus taken, after death, from the small isolated abscess in the left lobe of the liver in Case I.

It is impossible, of course, to draw any conclusion from these few examinations, but the characteristic microscopical appearances of the material removed from hepatic abscesses, would seem to be the presence of cells resembling liver cells, generally in various stages of fatty degeneration, and perhaps, also, of crystals of biliary coloring matter.

Tropical differ from pyæmic abscesses in having a

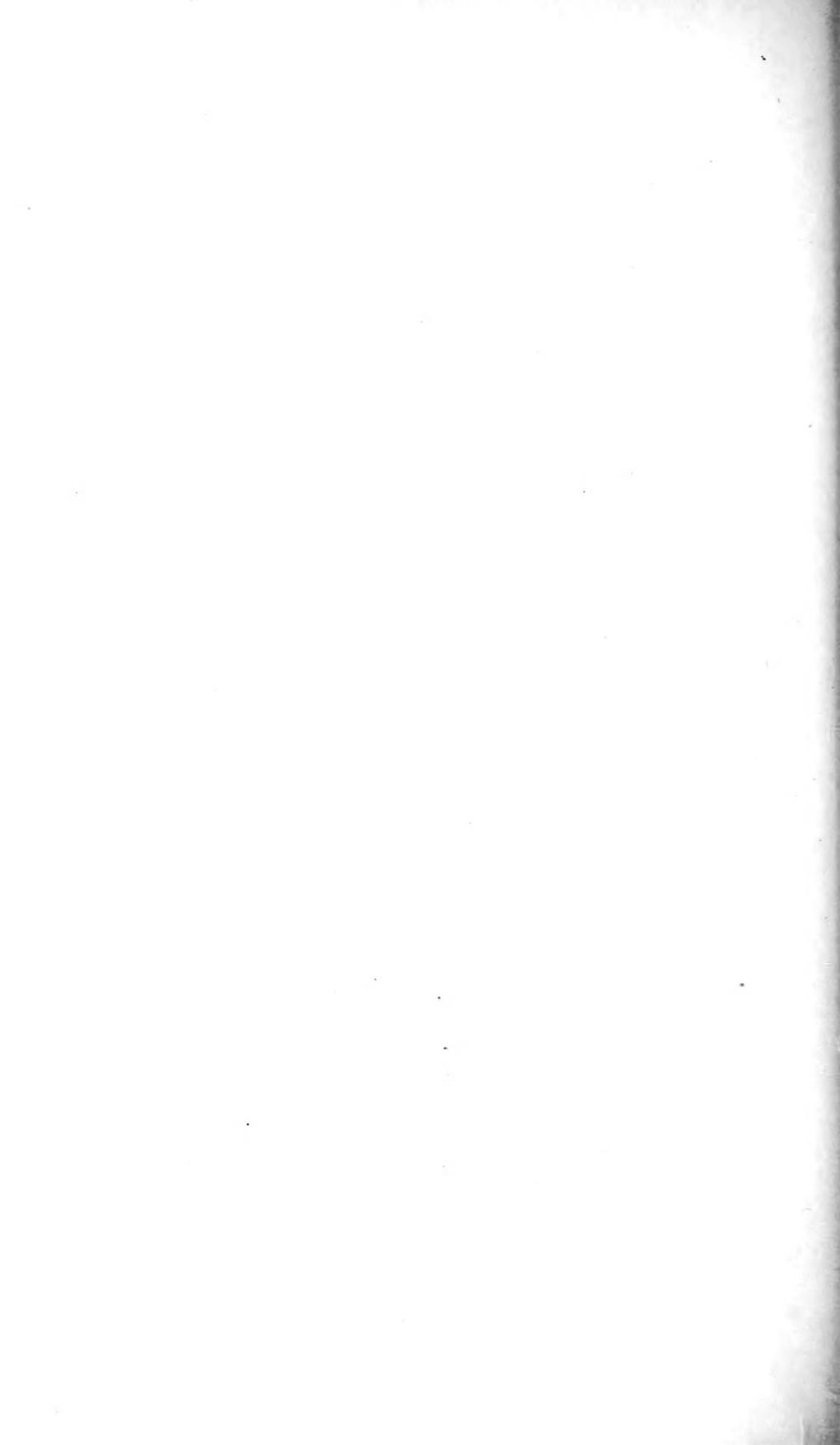
stage of hepatic congestion preceding the symptoms and signs incident to the formation of pus; afterward the rational symptoms differ only in degree from those of the latter class.

FIG. 3.



x 250

Without considering the treatment of this disease in detail, there is still one point that may be referred to, and that is the difficulty of evacuating the abscesses by means of the aspirator. This difficulty arises from the liability of the canula, even when large, to become plugged by the masses of broken down tissue floating in the pus. It has occurred in two of my cases. When the pus is deeply seated, or when adhesions with the parietes are imperfectly formed, it would certainly be unwise to resort to any other mode of evacuation; but if the pus be near the surface, and the adhesions firm, an incision with a bistoury is equally safe, and is preferable, because more successful.



## CASE OF HEPATIC ABSCESS.

(REPORTED DURING THE DISCUSSION ON THE PRECEDING PAPER.)

By

GEORGE H. HORN, M.D.,  
OF PHILADELPHIA.

[Communicated February 5, 1879.]

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In connection with Dr. Starr's paper, the following case may prove of interest :—

James C——, æt. 82, a master bricklayer, of florid complexion and good physical build, had always been strong and very healthy until the date of his last illness. In November, 1875, he presented all the symptoms of hepatic congestion, which were relieved by treatment. He regained his strength slowly during the month of December, and, in spite of strict injunctions to the contrary, left the house on a cold, drizzling day about Christmas time, and had a return of his previous symptoms, but in a more severe degree, and on this occasion preceded by a heavy chill. The symptoms now failed to yield to the treatment previously adopted, and there soon appeared a throbbing sensation in the right hypochondrium, followed in a week by an evident tumor, and great tenderness on pressure. The swelling first became apparent about the third week in January, and gradually enlarged, so that, by the end of February, the tumor extended to the crest of the ilium, and, in the middle, to the navel. About the 1st of March the swelling under the edge of the ribs became more convex, and the skin slightly red, and apparently thinner.

Becoming satisfied that there was an abscess, and that the skin was adherent, it was determined to discharge the contents gradually. This was done by means of a large trocar and canula, and for the first three days a pint was drawn off each day. The tumor now decreased in size rapidly, while more favorable symptoms began to appear, and the appetite returned. Each day varying amounts of pus were withdrawn, the opening being kept patulous by means of a plug of waxed muslin. The tumor, as such, finally disappeared, but not until *twelve pints* had been discharged. The record of the amount was carefully kept until within a few weeks of the patient's death, when the daily amount of discharge did not exceed half an ounce.

The pus in the earlier discharges was of good, healthy color, thicker than usual, flowing very slowly through the canula, and mingled with shreds of tissue. After a few days, however, the pus became more fluid, and during the later weeks was dark and irritating. The duration of the case as one of abscess was from the middle of January to July 26, when the patient died of exhaustion and blood poisoning.

Throughout the entire progress of the case, the bowels were constipated, but responded readily to mild cathartics. The appetite, after the first tapping, was good, and full diet and milk-punch were given, and all means used to support the system under the drain. The patient, however, gradually lost flesh, and died as above stated. No autopsy could be obtained.

The points especially noteworthy in this case are, the age of the patient, the duration of life under the exhausting nature of the case, and the amount of pus discharged. The treatment was essentially a supporting one, with mild laxatives for the bowels, and cataplasms externally. No other local treatment than that mentioned was attempted, as the probabilities were against any hope of recovery or improvement.

CASE  
OF  
IMMENSE ABDOMINAL TUMOR.

THE PROGRESS OF ITS DESTRUCTION AS SHOWN BY ITS HISTORY,  
POST-MORTEM AND MICROSCOPIC EXAMINATIONS.

By  
ADDINELL HEWSON, M.D.

[Read February 5, 1879.]

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I DESIRE to read to the College a brief sketch of a case of fibro-cystic abdominal tumor, which case is of special interest, I think, on account of the effects of treatment on the growth.

Miss H. S., a tall blonde, with blue eyes and brown hair, was induced by one of her friends in Philadelphia, who had been cured of an abdominal tumor of some size under my care, to seek my services in October last. Her history, as furnished to me by this friend before my seeing her, was that she had been suffering for six years from a steadily growing tumor in her abdomen, which was first detected after a suppression of menses the month previous—consequent on her bathing in the Hudson River on the second day of the flow. This suppression was attended by severe pain in the loins and inguinal regions. These pains and the suppression had continued ever since. When last seen by my patient, in the spring of 1878, her abdomen was of enormous size. She was very much emaciated in her limbs and face, but her appetite was very good, and all her bodily functions save that of menstruation healthy. She had four years previously consulted a distinguished ovariotomist in New York city, who had proposed operating on her at once,

as he said she could not live over a month in her then condition. She subsequently placed herself under the care of a homœopathist, who proceeded at once to tap her in the left iliac region, midway between the umbilicus and anterior superior spinous process. This operation resulted in the discharge of less than a tablespoonful of bloody fluid, and the case was then given up as hopeless.

I saw her for the first time on Sunday morning, October 20, at a relation's house in this city, where she had arrived on the Saturday previous after a journey of over one hundred miles. She was, when I saw her, propped up in bed, suffering with much dyspœa and exhaustion, and with her tumor so large and projecting on her thighs that she could not see her knees. The integument covering this growth in its lower portion (from the umbilicus down) was in a state of marked hypertrophy (like that of elephantiasis), and in singular contrast with the blue, attenuated skin above the umbilicus; this hypertrophied skin was weeping freely a watery fluid, so constantly that it had been impossible to keep her dry, or to prevent excessive excoriation and itching; the distension of this portion of the skin had been such as to cause a hernial protrusion in each iliac region, and the whole projecting forwards made it impossible for me to reach the vulva by the full length of my forearm. Her vulva was excessively œdematosus.

The patient had no difficulty with either her bowels or bladder, save frequent micturition from the latter. The day that she came to Philadelphia, she was weighed at the depot; this showed that she had gained in weight during the past six years fifty-eight pounds, in spite of the decrease in size of her limbs and chest, for she weighed just before the tumor began to grow 107 pounds, and now 165 pounds. Before starting on her journey she measured herself around, at the navel, and found her circumference there to be 54 inches. I made no attempt at a critical measurement or examination on my first visit (October 20), but simply made a complete covering of the tumor with a paste of clay and

water, one and a half pounds of the former to three-quarters of a pound of the latter, retaining it in the usual way with a thin layer of cotton batting. With this she expressed considerable satisfaction: she slept better that night than she had for a long time, and I found her the next morning, still propped up in bed, but very comfortable. When I removed the dressing on account of its having been much broken, as is usual at first in these cases, she complained of the want of the support it had afforded, and especially of a dragging sensation in front, from the ribs on the right side. Percussion yielded positive dulness up to that point, with very marked resonance above, on the left side, under the excessively expanded thorax; tracing this resonance on the left side I could follow it down on that side of the tumor into the iliac fossa. I was also able in the same manner to detect the beginning of the colon, on the right side, but it was evidently much pushed up. The walls of the belly on either side fell over so much as to make it difficult to determine the points of the anterior superior spinous processes.

This examination evidently fatigued the patient, and I desisted from pushing it further. Its effect suggested to me the inquiry of her mother as to her ever having suffered with symptoms of an hysterical character; to which, as I expected from her courageous conduct, I got a negative answer. This was satisfactory as to the location of the tumor. They further stated that she was wearing constantly a large sponge in the vagina, to prevent protrusion there. An examination of her urine, which had been saved by my direction, showed it to be free from albumen, but heavily loaded with phosphates.

I then renewed the dressing, using the same quantity of clay and water, the same covering of cotton wadding, and as a supporting bandage a four-inch roller around the waist, and a loop of the same breadth fastened to this waistband well back in the lumbar region on both sides, after having been carried under the tumor close to the symphysis pubis. As the patient's appetite was good, and as there were no

signs of indigestion, I allowed her freedom as to her diet, and ordered a slight use of stimulants.

On the next day I found the patient still more comfortable; she had been less disturbed by micturition during the night, and was lying quite comfortably in bed, less propped up, and somewhat over on her right side. She seemed so much better that, after I had removed the dressing, I made a further examination, including deeper explorations by percussion, and a thorough series of measurements with a strong, broad tape-measure. The results of measurement may be seen from those of Oct. 21, in the accompanying table. Deep

TABLE OF MEASUREMENTS OF MISS H. S.

Date.	Circumference at		Inches from umbilicus to			Circumference three inches	
	Xiphoid cartilage.	Umbilicus.	Xiphoid cartilage.	Symphysis pubis.	Right ant. iliac spine.	Left ant. iliac spine.	Above umbilicus.
October	36	48 <sup>3</sup> <sub>4</sub>	12	17	16 <sup>1</sup> <sub>2</sub>	15	48 <sup>3</sup> <sub>4</sub>
" 22	34 <sup>1</sup> <sub>2</sub>	47 <sup>1</sup> <sub>2</sub>	12	16	16	..	47 <sup>1</sup> <sub>2</sub>
" 23	34	45 <sup>1</sup> <sub>2</sub>	12	15	15 <sup>1</sup> <sub>2</sub>	15	45 <sup>1</sup> <sub>2</sub>
" 24	35	46	12	14 <sup>1</sup> <sub>2</sub>	15 <sup>1</sup> <sub>2</sub>	14	46
" 25	33	46	12	14 <sup>1</sup> <sub>2</sub>	14 <sup>1</sup> <sub>2</sub>	14	45
" 26	33	44	12	14	14 <sup>3</sup> <sub>4</sub>	14 <sup>1</sup> <sub>2</sub>	44
" 27	34	44 <sup>3</sup> <sub>4</sub>	11 <sup>1</sup> <sub>2</sub>	16	14 <sup>1</sup> <sub>2</sub>	14	44 <sup>1</sup> <sub>2</sub>
" 28	33 <sup>1</sup> <sub>2</sub>	44 <sup>1</sup> <sub>2</sub>	11 <sup>1</sup> <sub>2</sub>	14	15	14 <sup>1</sup> <sub>2</sub>	43 <sup>1</sup> <sub>2</sub>
" 30	32 <sup>1</sup> <sub>2</sub>	43 <sup>1</sup> <sub>2</sub>	11	14	14	14 <sup>1</sup> <sub>2</sub>	43 <sup>1</sup> <sub>2</sub>
November	32 <sup>3</sup> <sub>4</sub>	43 <sup>3</sup> <sub>4</sub>	11	14	13	13	44
" 4	32 <sup>1</sup> <sub>2</sub>	43 <sup>1</sup> <sub>2</sub>	10 <sup>1</sup> <sub>2</sub>	13 <sup>1</sup> <sub>2</sub>	14	14 <sup>1</sup> <sub>2</sub>	43
" 8	32	44	9	12 <sup>1</sup> <sub>2</sub>	12 <sup>1</sup> <sub>2</sub>	13 <sup>1</sup> <sub>2</sub>	43
" 11	32	43	10 <sup>1</sup> <sub>2</sub>	14	13 <sup>1</sup> <sub>2</sub>	14	44 <sup>1</sup> <sub>4</sub>
" 14	33	43	10 <sup>1</sup> <sub>2</sub>	12 <sup>1</sup> <sub>2</sub>	13	13 <sup>3</sup> <sub>4</sub>	43
" 18	32	42 <sup>1</sup> <sub>2</sub>	9 <sup>1</sup> <sub>2</sub>	12 <sup>1</sup> <sub>2</sub>	13	13	42
" 21	31 <sup>1</sup> <sub>2</sub>	42	9 <sup>1</sup> <sub>2</sub>	13	12 <sup>1</sup> <sub>2</sub>	13	41
" 26	31 <sup>1</sup> <sub>2</sub>	43	9 <sup>1</sup> <sub>2</sub>	13	13	13 <sup>1</sup> <sub>2</sub>	41
" 29	31 <sup>1</sup> <sub>2</sub>	42	9 <sup>1</sup> <sub>2</sub>	12 <sup>1</sup> <sub>2</sub>	12	13	40
December	31 <sup>1</sup> <sub>2</sub>	42	9 <sup>1</sup> <sub>2</sub>	13	13	13	41 <sup>1</sup> <sub>2</sub>
" 7	31	43	9	12	12 <sup>1</sup> <sub>2</sub>	13 <sup>1</sup> <sub>2</sub>	41
" 11	31	42 <sup>1</sup> <sub>2</sub>	10 <sup>1</sup> <sub>2</sub>	13	13 <sup>1</sup> <sub>2</sub>	14	43
" 14	31	41 <sup>1</sup> <sub>2</sub>	9	12	12 <sup>1</sup> <sub>2</sub>	12 <sup>1</sup> <sub>4</sub>	41
" 18	31 <sup>1</sup> <sub>2</sub>	41 <sup>1</sup> <sub>2</sub>	10	12	13	13	41
" 23	32	42	9 <sup>1</sup> <sub>2</sub>	12	13	13	41
" 26	32	41 <sup>1</sup> <sub>2</sub>	10	12	13	13	40
January	32 <sup>1</sup> <sub>2</sub>	41 <sup>1</sup> <sub>2</sub>	10 <sup>1</sup> <sub>2</sub>	10	13 <sup>1</sup> <sub>2</sub>	14	42 <sup>1</sup> <sub>4</sub>
" 27	31 <sup>1</sup> <sub>2</sub>	42	10	11 <sup>1</sup> <sub>2</sub>	12	13	41

exploration showed great tympany under the ribs of the left side; then, below, to a line corresponding with the umbilicus, whilst the patient was sitting up, distinct succussion as of a fluid confined to that portion of the peritoneal cavity; there was then the dulness and feeble succussion, or jelly-like movement, belonging to fibro-cystic tumors, extending down from the line of the peritoneal fluid, and confined to the central portion of the belly, as though there might be a fibro-cystic growth from the body or fundus of the uterus. The patient was unwilling to let me pass my hand or fingers into the vagina, so as to explore in that direction, on account of being so sore there, and from the fact that there was the sponge in the vagina which she had just replaced. Rolling this central mass as much as I could on this occasion, I now formed the opinion that I had a fibro-cystic tumor, probably connected with the uterus, to deal with, and that this growth was extensively connected and bound down by peritoneal adhesions below, and possibly by one band at least in the neighborhood indicated by the dragging feeling she complained of during these manipulations.

On the 22d and 23d, the table which I preserved of her measurements showed a most positive diminution, especially of those which related essentially to the tumor itself—thus, on the 23d she was found to measure 3 inches less around the umbilicus, 2 inches less from symphysis to umbilicus,  $3\frac{1}{4}$  inches less around the waist above the umbilicus, etc. (This table shows two omissions on the 22d; these were made by my scribe on the occasion—the mother of the patient—who was so delighted with the changes which had been produced that she omitted these whilst expressing her delight, and I did not know this fact until it was too late to remedy the omission.) The patient continued to improve in this way steadily, so that in two weeks all the major measurements had diminished each about 4 inches (some of them  $3\frac{1}{2}$  and others  $4\frac{3}{4}$ ). She was then walking about her room, sleeping comfortably on both sides, but preferably on the left, and even dressing herself with a silk dress which she

had not before been able to make meet on her person for more than two years. She was confident of her complete recovery. During all this time she never took any anodynes or medicinal remedies, save what was necessary to move her bowels twice in the week, pills of rhubarb, aloes, etc.

On the 16th of November, she ventured out in a street car, not going very far however the first time; this did her no harm, but on the contrary she measured less on the 18th than ever before. I was now visiting her at intervals of three or four days, her mother renewing the dressing, if required, in the *interim*. Her improvement continued steadily; she got to walking on the street, and I visited her about every four days, making, as the table shows, the same form of measurement, with not so great a decrease as was noticeable at first. During the Christmas holidays she walked over nine squares on Chestnut St., and became so exhausted as to be compelled to go into a store for rest. A day or two after, she noticed some œdema in her right foot, with scanty urine; the latter was tested by me, and found free from albumen. She from this time grew weaker, notwithstanding the free use of stimulants and fluid nutriment, and finally sank from exhaustion on Saturday, February 1, at 12 P. M. The last measurements were taken at her own request, on January 27, four days before her death. They showed no material increase of the growth, the little difference being readily assignable to her increased weakness.

A very marked feature in this case was the shrinkage of the growth at such a rate that the integument could not keep pace with it; the latter early became so loose and flabby that a mass of it above the navel could be drawn between the fingers and thumb, and showed a thickness of less than half an inch, whilst that below the navel, when I first succeeded in drawing it away from the tumor, constituted a mass of over five inches in thickness, whereas the last day I

measured her (January 27) it formed a thickness of less than two inches. This hypertrophied integument ceased to weep very early in the treatment, and all the signs of hernia disappeared.

*Post-mortem Examination.*—In passing from my office to the late residence of the patient with my son and a companion (Mr. Kempton), who were to make the examination with me, I said that we would, I thought, find a large fibro-cystic tumor, or a fibroma, in a state of degeneration and disintegration, such as occur in nature's mode of curing those tumors, for I had no other mode of explaining the dissipation of them, which I had witnessed so frequently under the earth dressing. This was the first opportunity I had had of making an autopsy under such circumstances, and I was therefore anxious to secure the specimen and have it thoroughly examined. I also stated that I expected to find the growth attached to the fundus of the uterus, but likewise bound down by such extensive adhesions as would keep the loose fluid in the peritoneal cavity, above the line of the umbilicus. My reason for this statement was the absence of distinct fluctuation, and the dry tapping got by the homœopathist in the lower abdominal region. I also anticipated the possible presence of the remains of a heart clot, from her fainting spell on the street about Christmas time; this occurrence had however been so long ago (although her failing had begun at that time), that such an obstruction could hardly be assigned as the direct cause, certainly not the mode, of death, which was, evidently, from exhaustion.

At the autopsy, our first step was to plunge a trocar in on the right side, at a point midway between the right anterior superior spinous process and the umbilicus; here we got the same negative result that the homœopathist did in his operation during the patient's life, at the corresponding point on the left. An incision along the linea alba, below the umbilicus, carried deeply in, over two inches, which was the depth

to which the trocar was plunged, gave almost the same absence of fluid; the knife had evidently gone into the growth, and I immediately called the gentlemen's attention to the sections made of the empty cysts, and to the soft condition of the fibrous structure proper. Separating the abdominal walls from their adhesions, showed a number of these cysts, from the size of a goose egg down to that of a pea, in a state of collapse, and empty of fluid. The peritoneal surface of the abdominal walls here, viz., at those parts referred to before as having their integuments when first seen by me in a state of extreme hypertrophy, like that of elephantiasis, was singularly coated with a product quite evidently in a state of degeneration, and so marked as to be noted at the autopsy.

On extending the incision up above the umbilicus, and along the linea alba, the knife almost immediately penetrated into a large cavity of fluid, serous, and slightly tinged brown; the fluid was removed by sponges, and found to amount to twenty pints. The viscera were all pushed up under the ribs, the liver much shrivelled, and with a broad band—one inch wide and five or six long—extending from the under surface of that viscus to the upper part of the tumor on its right side; a similar band was found extending on the left side to the arches of the diaphragm. These were cut away, with portions of the liver and deep structures, for subsequent examination. The abdominal viscera, as far as examined, were healthy; the cæcum was much thrust up under the liver, but healthy, as were the transverse and descending colon and sigmoid flexure. No time was allowed us for examination of the thoracic viscera. The specimens were removed in a bucket, for further and microscopic examination by Dr. Morris Longstreth, who has furnished the following report of his results:—

The tumor was of a fibro-cystic character. It had a firm, jelly-like feeling when handled, and showed on the surface numerous rounded projections, giving a very distinct, fluctuating resistance. The tumor in part was covered by a thick,

shining membrane or capsule; in other parts the surface was rough, and showed small granulations on or beneath the investing membrane. The mass was connected by a short flat pedicle to the fundus of the uterus. It was adherent to the abdominal wall, to the right of the median line, below the level of the umbilicus. The adhesions at this part contained large arterial and venous trunks; the largest venous trunk had a calibre capable of receiving the end of the thumb. In the walls of these vessels, on the surface of the tumor, were calcareous plates, partly encircling their calibre. There was also an adhesion to the fundus of the gall-bladder, by which that viscus was much elongated by the downward pulling of the tumor. The gall-bladder contained a very little, pale, thin mucus, and there were found three small, rough, biliary concretions of a black color; one of them was found in the cystic duct, which was closed. In this adhesion ran two large vessels to be distributed to the tumor. Another adhesion was found at the left upper part of the mass, connecting it with the omentum. The omentum was very much shrivelled and rolled up into a firm mass, devoid of fat.

The uterus was found slightly elongated; its os was dilated, with the lips thickened and irregular. A probe entered the uterine cavity a little more than three inches. The uterine tissue was flabby; on section, the muscular substance was found pale and atrophied in appearance, but its vessels were full of blood. The mucous membrane appeared normal. The peritoneal covering was rough, the same granular appearance being present, and there were found on it one or two pea-sized nodules of a white color and firm consistence (fibroids). The ovaries were hard, white, nodulated, and smaller than usual. The broad ligaments were thickened, and their vascular trunks, especially the venous, enlarged and full of blood.

A section was made of the tumor on its anterior aspect. Its capsule was thick, firm, and fibrous in character. The cystic projections on the surface of the tumor, especially the cysts on its anterior part, were partly collapsed and evidently

in a process of reduction in size. Their contents were of a tremulous, jelly-like character, whitish in color, and semi-translucent. In the deeper parts of the tumor, the consistence of the fibrous substance varied greatly, as did its color; the major portion was of a pinkish-gray color and semitransparent; only very limited portions of it presented the usual aspect of fibroid tissue. Numerous bloody points were seen, apparently extravasations of blood. Many large and small

FIG. 1.

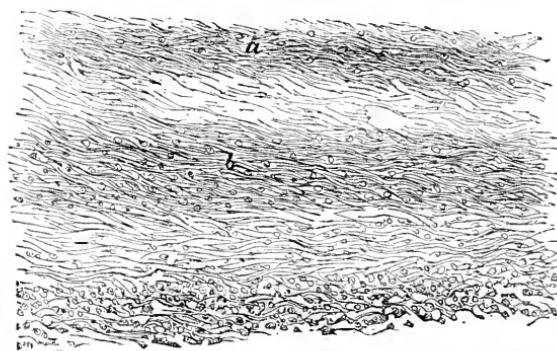


FIG. 1.—*a* shows a band of fibroid tissue, closely felted, having in it a few nuclear bodies, placed between the fibrillæ. At *b*, the fibrillæ appear swollen and more separated than at *a*; the nuclear infiltration is much greater. At *c*, the fibroid tissue is at a minimum; the nuclear bodies occupy the greater part of the area of the band; the fibrillæ are widely separated, the intervening spaces being filled with a nearly transparent, mucoid-looking fluid, in which the nucleated bodies rest. The section shown in the figure was taken from the periphery of a cyst with semi-fluid contents.

rounded areas were found, having a cyst-like appearance, and of a whitish opaque color. The size of these cysts varied from one or two inches down to that of little pea-sized bodies. The contents of the cysts could be easily removed; none contained purely fluid materials; it was sticky and gelatinous in every instance, but varied in degree in this respect, and also in color. The less consistent material was the more

translucent, whilst the firmer was of a dull, whitish, opaque color.

A microscopic examination of the firmer parts of the tumor showed only in very limited areas an appearance typical of fibroid structure, but still sufficient to establish the undoubted nature of the growth. In general, the picture presented was

FIG. 2.

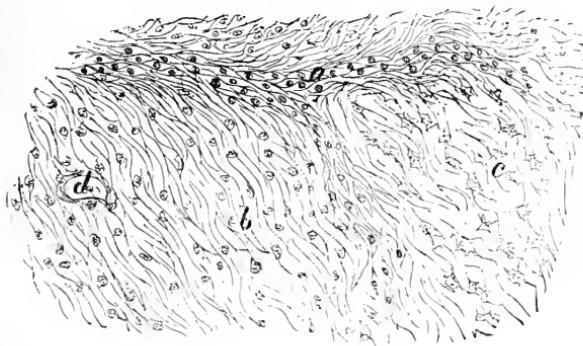


FIG. 2.—The section was taken from the border of a nearly fluid cyst. At *a*, is seen a pretty closely felted band of fibroid tissue, branching around a beginning cyst, *c*; at *b* and *d* (*d* represents a vessel), the fibrillæ are widely separated, showing very much the same conditions as at *c*, Fig. 1; the fibrillæ, however, are less closely packed. At *e* (Fig. 2), the fibrillæ are very scanty, and numerous cells resembling those of mucoid tissue are seen. Passing further to the right, in the section, was found the cyst with nearly fluid contents, in which the fibrillæ had disappeared completely.

of short tracts of fibres, of almost a purely fibrous character, ending abruptly sometimes, or sometimes fading out or lost in tissue quite transparent and homogenous, in which rarely a fibre was distinguishable. This transparent tissue was frequently seen crowded or scattered full of nuclear bodies, placed in an irregular manner. In other parts, the cellular elements were of a character resembling those of a myoma, and here also the nuclear bodies were seen presenting the same irregular arrangement. In very limited areas, as seen in the microscopic field, a nearly complete myxomatous de-

generation had taken place, making, in fact, cysts similar to the larger one already described, so small as not to be distinguished by the naked eye.

The contents of the larger cysts, examined in thin sections, showed a more or less complete myxomatous change in the material. The firmer material removed from these cavities still showed a few remaining bands of fibrous structure, whilst the less consistent, translucent matter showed only a mucoid tissue, in which at some parts the nuclear bodies were quite abundant. The lining of the cyst walls showed no peculiar arrangement of structure, the surrounding tissue passing gradually into the degenerated area. The fibroma found on the peritoneal surface of the uterus showed the typical characteristics of such growths. It was noticed that the arrangement of the fibres was concentric, so much so that in sections taken through the centre of the spherical growth bands of fibres were traced running in complete circles.

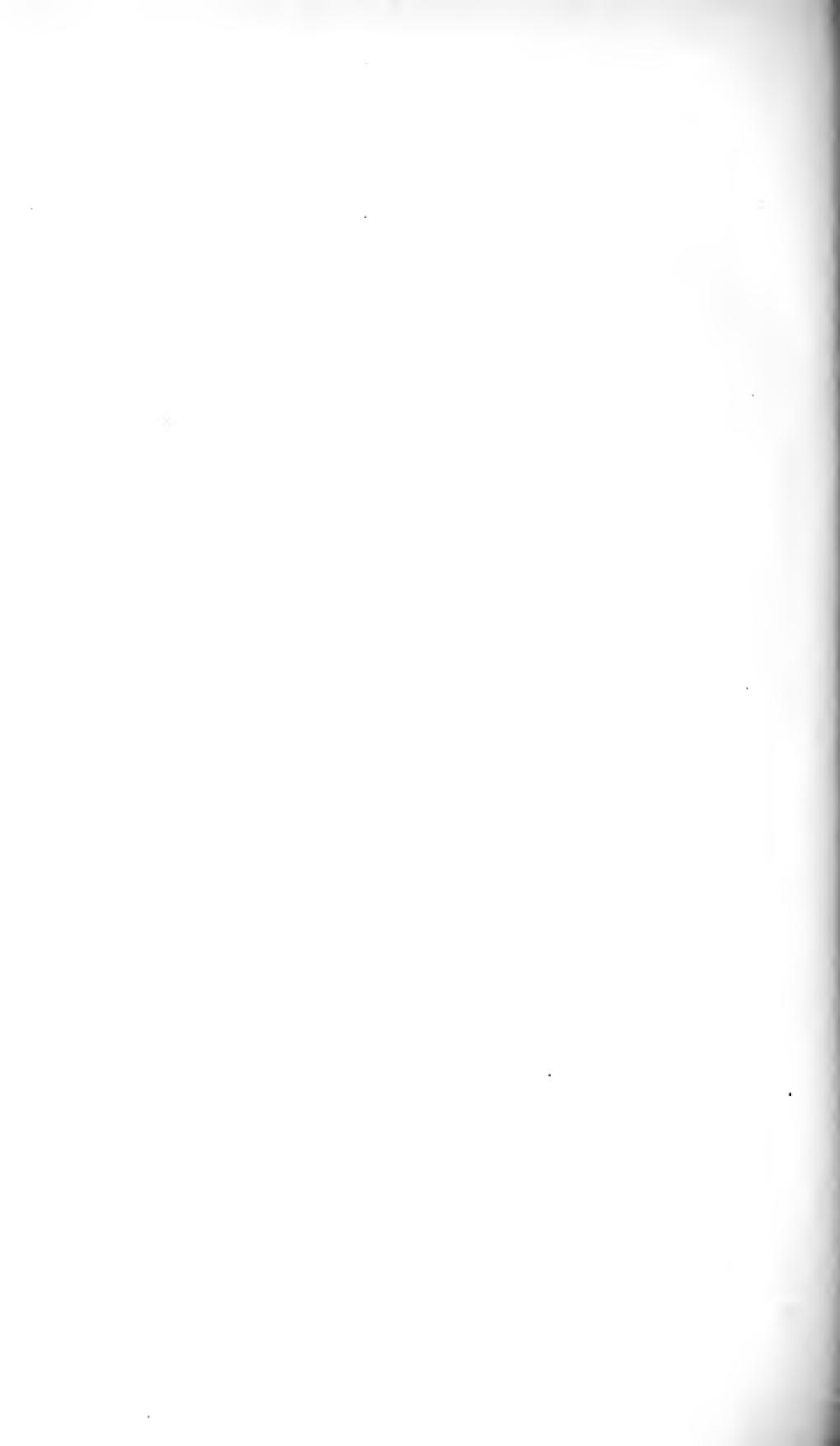
The nature of the granular appearance, described as present on the fibrous capsule of the tumor and at other parts, could not be distinctly determined by the microscopic examination. From the appearances presented to the eye, and such as could be determined in the field of the microscope, the conditions seem to be similar to that occurring generally throughout the tumor, viz., a degenerative process.

The liver showed evidences of atrophic changes, and there was also found some increase of the connective tissue of the portal canals, not, however, to be classed as a cirrhotic change.

*Anatomical Diagnosis.*—Fibroma of the uterus undergoing cystic degeneration.

The tumor and fluid removed, I may say, at the autopsy, weighed, the former  $27\frac{1}{2}$  pounds, and the latter 20 pounds, making a total of  $47\frac{1}{2}$  pounds, which is in contrast with the weights of the patient at the two periods, viz., before the first signs of the tumor,

six years ago, when it was 107 pounds, and immediately before beginning the treatment in October last, when it was 165 pounds (notwithstanding the excessive wasting of her limbs, etc.), which gives 58 pounds to be attributed to the growth against the actual weight of the fluid and tumor of  $47\frac{1}{2}$  pounds found at the autopsy, showing a loss of at least  $10\frac{1}{2}$  pounds. I might indeed very fairly claim a greater loss in the tumor in weight, for when the patient's weight was taken before the detection of the tumor, her condition of body was good, whereas when she began treatment, she was much emaciated, and yet weighed 58 pounds more. This difference of over ten pounds, however, corresponds with the differences in the measurements at the beginning and end of the treatment.



## ON THE RELATION OF SEWER GAS TO TYPHOID FEVER.

By  
GEORGE HAMILTON, M.D.

[Read March 5, 1879.]

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THE subject of the paper for this evening cannot but be regarded as one of much importance, as well in relation to medicine as in reference to the public at large. As you are all aware, the attention of the community, in general, has for a few years past been drawn in an unusual degree to the subject of sewer gas as an agent in the production of typhoid fever, and recently it has been declared by several writers to be the most potent and common cause, not only of this fever, but also of scarlet fever, and, in a special degree, of diphtheria. As a consequence of these declarations, a feeling of anxiety and alarm has manifested itself, greatly disproportionate to what an unbiassed and calm consideration of the subject will admit, or an examination of the reports of the Board of Health will justify. That those members of our profession who have endeavored, so earnestly and persistently, to impress upon the mind of the public, as well as of the practitioner, that sewer gas is the most potent and common cause of typhoid fever in Philadelphia, have acted conscientiously, no one need doubt. To their excellent standing in the profession, and to their zeal in promulgating the views alluded to, is, in

great measure, due the success that has attended their efforts in this direction. So successful, in fact, have these efforts proven that probably one-half of the profession in this city, and a still larger proportion of the citizens who may have given some attention to this subject, have been induced to accept the views so urgently pressed as a finality. It is, however, to be remembered that very little in opposition to the opinions stated has been attempted, and it may be that the present will prove a futile effort to stem the actual current of professional and popular feeling upon this subject. Nevertheless, we feel quite assured that a large majority of practitioners who have had, at the bedside of patients, the most frequent and abundant opportunities for the study of typhoid fever, will reject the evidence hitherto offered to prove that sewer gas is the most potent and common cause of typhoid fever in Philadelphia, or elsewhere, as utterly untenable, and as in direct antagonism with the facts and figures pertaining to that malady.

An observation or two, in reference to the more acute aspect of disease as it occurs in the country, compared with what is seen in city practice, may here be admitted, bearing more or less directly upon the subject before us. The late Dr. Joseph Parrish, eminent in citizenship and as a practitioner, when lecturing, in 1830, before a summer class of students upon bilious remittent fever, narrated his sad experience of this disease, as witnessed in consultation with country physicians within a circuit of about seven miles of the city (sometimes in Pennsylvania, at other times in New Jersey), by declaring that, in frequency in proportion to population, and in violence and fatality, it

greatly exceeded anything he had ever met with in Philadelphia. The same remark was made by him in regard to dysentery, and was fully verified by the writer when, a few years later, he began practice thirty miles distant from the city. The accounts received from time to time from country physicians regarding the disastrous epidemics of the diseases mentioned, and, in an especial degree, of diphtheria, are doubtless familiar to you.

Some statements, made by the writer during the discussion that followed the delivery of the paper of Dr. Keating upon the relation of sewer gas to typhoid fever, must here be repeated, as some who are now present may have then been absent. Centreville, my location in the country for more than ten years, was upon the ridge separating the Brandywine and Red Clay Creeks; distant seven miles from Wilmington, seven from Kennet Square, four from Dupont's, and eleven from West Chester. The surrounding country, rolling or hilly, abounded in nearly every direction with springs of fine water. In this rural section began my first bedside experience in typhoid fever, and the occurrence in my practice of four cases of intestinal perforation, in the space of twelve consecutive months, may but too well attest the character of the prevailing epidemic. It was not, however, until after five years' practice in this vicinity that typhoid fever developed itself; the usual form of fever in earlier years of practice having been bilious remittent, which, like the typhoid, at times assumed an epidemic character, and proved nearly as fatal as typhoid, while in other seasons but few cases occurred, the local conditions remaining essentially the same from year to year.

The change from bilious remittent to typhoid fever was, naturally enough, not abrupt, some of the symptoms of the former gradually giving place to those of the latter. In mode of progression there was a close resemblance between them; either disease showing itself upon an elevated plain, on the brow or slope of a hill, or in the vale below, with perhaps a slight preference for the latter; while the mansion of the opulent farmer would, in turn, be visited with the home of the humble cottager.

Two remarkable instances of typhoid fever, mentioned in the discussion before alluded to, cannot, for the reason then assigned, be passed in silence. One occurred in the residence of a wealthy farmer, the family consisting of eight persons, of whom only one, the mother, escaped an attack. Six were severely affected—three of them dangerously—while the seventh, a colored servant, suffered but slightly. Now the important point in the history of these cases is revealed in the fact that the disease did not originate upon the premises. A son, about nineteen years of age, had been absent several weeks on business in Maryland, forty miles distant from his father's residence, and from thence was brought home sick, and, apparently from contagion, the others were in turn affected, giving rise to an attendance of nearly four months before the final recovery of the last patient. The second instance happened in a family of seven persons, four or five of whom were attacked; the death of a youth of eighteen years resulting from perforation. Here, again, the disease did not originate on the premises; the mother, the first patient, who had been assisting in nursing a relative several

miles distant, was brought back to her own home suffering from typhoid fever, contracted apparently from that relative. The number of persons attacked in both of these examples was exceptionally large, yet the disease rarely appeared in a family, even of moderate size, without more than one of its members being affected.

As to the origin of these widely diffused, destructive epidemics, nothing could be said in explanation except that, as a rule, a warm, moist spring, and, as a sequence, excessive growth of vegetation, followed by a hot, dry summer, appeared to favor the development of typhoid; just as had been noticed in former seasons in regard to bilious fever. In relation to the influence of local conditions, it may be said that in an old, long cultivated section, changes in these conditions rarely occur, and certainly nothing of this kind did occur that could explain the ravages of fever in one year and its absence or slight character the next; and hence the physicians of that section, so far as I knew, were nearly of one accord in regarding atmospheric, hygrometric, electric, or telluric conditions as the sources of the presence or absence, and of the violence or mildness, of the epidemic.

On returning to the city, thirty-three years ago, a location for practice was chosen at Sixteenth and Summer Streets, and has thus continued ever since. At that remote period, intermittent, remittent and typhoid fever prevailed to a considerable extent, especially between Broad Street and the Schuylkill. Not one of these types can now be seen so often, in proportion to population, as during the earlier years of my practice in this locality.

Some years after returning to the city, Professor J. K. Mitchell was called to consult with the late Dr. Gebhard and myself in a severe case of typhoid fever near my residence. This was at a period when bilious remittent was being gradually supplanted by typhoid fever. Dr. Mitchell then stated to us that nearly all the cases of this disease seen by him were in consultations upon the suburbs of the city, as in the case in which he met us, for at that time the locality was but a suburb; yet, in the suburbs at that period there were but few sewers or cesspools, and, as to water-closets, they were not to be found there; whilst on the contrary, in his own vicinity (Eleventh and Walnut Streets) they existed in all directions, and yet, as he informed Dr. Gebhard and myself, he scarcely ever saw typhoid fever in the families under his immediate care. Again, the late Dr. Wm. W. Gerhard, prominent as an authority in typhoid fever, informed me, about six years before his death, that he no longer regarded typhoid fever as either so prevalent or so fatal in this city as it had been in former years; that some modification of the disease, from unknown causes, had occurred, just as he had witnessed many years previously in Paris, where typhoid fever in some of the hospitals had gradually changed in character until, from a mortality of one in three patients, only one case out of seventeen attacked terminated fatally. With the statements and opinions thus expressed my own observations and experience fully accord.

During thirty-three years of practice in the city, four cases of typhoid fever, occurring in one family, have come under my care; in two or three families, two persons in each have been affected; yet, setting

these aside, one case only in any family coming under my observation has occurred. This is in striking and most favorable contrast with what, as before stated, often happens in epidemic typhoid in the country, where no sewer gas or obstructed drains are to be found in explanation of this difference. The increase in the number of sewers, water-closets, and cesspools, in Philadelphia, for some years past, has been simply enormous; and consequently the opportunities for contamination of the atmosphere, water, or milk, correspondingly augmented. If (as some have asserted) sewer gas is the most potent and common cause in the production of typhoid fever, and if so large a proportion of the houses in the city are infected by it, would we not have, in a population of nearly nine hundred thousand inhabitants, cases almost without number, and deaths in proportion, far more than quadruple the average number reported by the Board of Health?

Physicians have long differed in opinion in reference to the conditions under which typhoid fever is likely to occur, and in regard to the influence exerted by the various agents known, or believed, to play a part in the production of this disease. While many, at the present moment, are disposed to accept the opinion that in an atmosphere contaminated by sewer gas, or effluvia arising from cesspools, or decaying animal or vegetable matter, is to be found the ostensible cause of the disease; others are more disposed to refer it to the use of milk or water infected by the agents just named, and, in addition, to the consumption of food partially decayed. On the other hand, there are those who, whilst admitting the possibility or probability

that certain limited outbreaks of typhoid may be referred to the local causes just named, are fully convinced that the widely spread and fatal epidemics witnessed at times in the country can be explained by no such agencies as those alluded to; neither do we think that a practitioner, who has had the experience of a single season of epidemic typhoid fever in the country, can refer to these agents as the cause of such epidemic, without rejecting the evidence of his own senses.

Dr. James Jackson, of Boston, long before Pettenkoffer, in explanation of certain erratic and very restricted outbreaks of typhoid fever, ventured to suggest that, in the absence of any visible agency, some emanation from the soil, obscure as to origin, might account for them. Pettenkoffer, however, determined that in proportion to the elevation or depression of the water level in the earth was the greater or less prevalence of typhoid fever, without fixing any limit as to the extent of its influence. When we call to mind that, as before stated, a hot, dry summer is, as a rule, the precursor of an unusual amount of fever, either remittent or typhoid, the view of Pettenkoffer demands attention and earnest consideration; for, after laborious and protracted researches, he announces, definitely, that in proportion as the water level becomes lower, typhoid fever increases. That many epidemics of the fever appear without the possibility of assigning any special cause in explanation of their origin, is manifest, and no one is more prepared to admit this than the practitioner and medical writer of large experience. Whatever may be the cause or causes of the fever, when once established,

contagion, especially when aided by the concurrence of certain indefinable, elemental, and local influences, lends its all-powerful aid in its extension; this, at least, is the opinion of Bretonneau, Troussseau, Louis, Gendron, Chomel, and many other investigators of the disease in France, England, and the United States; among the latter, Drs. Nathan Smith, James Jackson, Elisha Bartlett, and Austin Flint, Sr.

Of the writers quoted, nearly all recognize that very frequently the disease arises spontaneously, and, while some of them admit that a limited number of cases may be due to emanations from sewers or cess-pools, others, regarding typhoid fever as specific in character, claim that a specific cause is necessary to develop the disease; and that they find no sufficient evidence of such cause either in the respiration of the effluvia alluded to, or in the consumption of unwholesome food. Troussseau, the medical genius of France, declares "that in Paris, or other large centres of population, it is impossible to determine the origin of the malady; and that this can only be done by physicians who practise in limited spheres, when it can generally be ascertained where the first attack of the disease was noticed." Than this, nothing could be more certain in relation to contagious disease in general; for in the street car may be seated by your side the washerwoman, whose bundle upon her lap may contain the clothing of a patient affected with a malignant disease.

When, from time to time, on meeting with physicians of this city who have formerly practised in the country, the inquiry has been made as to the origin of typhoid fever, the answer has been, without excep-

tion, that only in an occasional case could even a hypothetical local cause be assigned. The late Dr. Gallagher, of West Philadelphia, once informed me that, from 1839 to 1842, he was nearly broken down in attending to cases of typhoid fever occurring in the fine rural section four or five miles west of this city. If typhoid is a specific fever, and has as a definite, specific cause, sewer gas, what can be said in explanation of its great prevalence and fatality at the distance of a few miles only from the city, where no sewer gas exists? All writers and practitioners, however, do not accept *in toto*, perhaps not at all, the sewer gas theory; but on the contrary refer to the emanations from decomposed vegetable and animal substances, and from cesspools, as frequent sources of the disease; in addition to which, a third class of observers insist that food, liquid or solid, contaminated by these agents, must be taken into account before a solution of the grand problem, the causation of typhoid fever, can be accomplished. But these various hypothetical or assumed causes, have been for years under serious and earnest consideration, yet, so far from solving the difficulty, we are, in many respects, little further advanced than when Montaigne, three centuries ago, in his amusingly furious tirade against doctors and their prescriptions, said, quoting the language of Pliny: "That the most important science in use with us, that which has our preservation and our health in charge, is unfortunately the most uncertain, confused, and disturbed by the most frequent changes," and then, giving utterance to his own thoughts, exclaimed: "There is no great danger of our being mistaken as to the altitude of the sun,

or in the fraction of an astronomical calculation, but here, where it concerns our very existence, it is not wisdom to expose ourselves to the mercy of so many contrary and agitated winds."<sup>1</sup>

Attempts have often been made to explain away the difficulty of accounting for the extraordinary prevalence and fatality of typhoid fever in the country, as compared with the city, by alleging that the water is, probably, contaminated by the well being too near to where is located the family necessitude, or otherwise that the drainage is from the latter to the former. Again, it is said that the effluvia, arising from decayed vegetable matter stowed away in vaults or cellars, are a fruitful source of the disease. That such a condition of things may obtain among families in some of the manufacturing towns of England, or other places in Europe, or in certain localities of this country, may be granted; but that it characterizes any considerable portion of the rural sections that have come under my own notice cannot, in truth, be admitted; and certainly the charge of negligence and improvidence, implied in the above allegation, can have no application to the circle of my former practice in the country, nor to the region adjacent.

A most significant reference must here have place. At the distance of three miles from my location was situated, upon the Brandywine, the cotton factory of

<sup>1</sup> "Que la science la plus importante qui soit en nostre usage, comme celle qui a charge de nostre conservation et santé, c'est, de malheur, la plus incertaine, la plus trouble, et agitée de plus de changements.' Il n'y a pas grand dangier de nous mescompter à la haulteur du soleil, ou en la fraction de quelque supputation astronomique : mais ici, où il y va de tout nostre estre, ce n'est pas sagesse de nous abandonner à la mercy de l'agitation de tant de vents contraires."—Montaigne, Essais, Liv. 2, chap. 37, Paris, 1834.

Mr. Wm. Young, employing a large number of hands, of whom probably at least one-half were under my care; and yet, so far as memory serves, only two cases of typhoid fever there, ever came under my charge. At the distance of about a mile below are located the immense establishments of the Messrs. Dupont, where thousands of people live in comparative proximity. As my practice did not extend to these works, a note was sent a few weeks ago to Mr. Henry Dupont, asking whether or not typhoid fever prevailed among his employés during the years 1840-1843. The note of Mr. Dupont in reply states that, while of so distant a period his recollection is not clear, his impression is that there were but few cases of typhoid fever at that time among the people, and that they are generally healthy. A note recently received from Dr. Jos. P. Chandler, of Centreville, who has had an extraordinary opportunity of investigating the disease, confirms the impression of Mr. Dupont, as he is well qualified to do, from the large practice he has had at the works.

Dr. Chandler also informs me that, with the exception of a few cases of the fever, where it seemed probable that local causes may have given rise to the disease, the rule has held good that its origin is involved in obscurity. This statement is fully justified in the fact that the manufacturing centres, with their closely situated houses, do not suffer, as his letter informs me, in comparison with the rural sections, where the disease will often appear in the best and most favorably situated dwellings, with nothing within or without to explain the cause. Now when we call to mind that, in some seasons, typhoid fever has prevailed exten-

sively on the north and south side of the Brandywine, whilst the intermediate banks, with their dense population, have suffered but little, is it not worth while to concede, at least, to such a statement, so full of truth and meaning, that measure of thoughtful consideration which its importance merits, and in fact demands? At the present moment, and during the last two or three months, Wilmington has suffered from an unusual amount of typhoid, yet the banks of Brandywine have had but few cases; and whilst the proverbial generosity of the Messrs. Dupont never flags, when the safety, the health, or the general welfare of their employés is in question, the fact is nevertheless obvious, that the local conditions must, of necessity, be in several points such as in the opinion of many physicians would surely engender an epidemic of typhoid fever, which yet for a long series of years has not occurred.

In the earlier part of this paper, it was stated that the reports of the Board of Health of this city did not warrant the anxiety and alarm that exist in relation to sewer gas, as the chief agent in the production of typhoid fever; and without going into details, a few points only will be adduced in reference to this matter. The reports show that very often the deaths from this disease are more numerous in the winter months than during the hot weather of the summer. For example, in January, February, and December, of 1878, the deaths in the order named, were 34, 32, and 33, whilst in July the deaths were but 23; yet this month, as shown by the record of the last ten years, is the hottest of the year, and consequently is the period when fermentation, decomposition, and putrefaction are most

actively engaged in evolving effluvia from animal or vegetable substances. This record of facts and figures may, by some, be regarded as inconceivable and perplexing, yet it finds its counterpart in the country, where during one entire winter the disease was unusually prevalent and fatal. Incidentally, it may here be stated that Dr. L. P. Bush, of Wilmington, during that winter, made, at my request, the examination of the body of a young man who died, apparently from perforation, and this was verified by his careful *post-mortem* search. To Dr. Bush, in fact, was I first indebted for the intimation that Dr. J. P. Chandler and myself were probably having to do not any longer with remittent, but with typhoid, fever, for his attention had, if I remember, been especially drawn to this change of type by Dr. Wm. W. Gerhard, and the work of Dr. Elisha Bartlett.

Quoting again, after this digression, from the Health Office Reports, we find that in a series of years the weekly deaths from typhoid average but six or eight in a population of nearly nine hundred thousand; and it should be remembered that this includes the deaths in the almshouses, prison, penitentiary, hospitals, house of correction, and all other similar establishments, making at least one-fifth to be deducted from the total reported.

It is only a few weeks ago that, of our vast population, only two deaths from typhoid were reported for the week. When we reflect upon the number of inlets constantly evolving gas, at times very offensive; the thousands of residences, factories, etc., infected with it; the throngs of plumbers and gas-fitters who are daily compelled by their vocation to inhale the

gas in no diluted form ; is there not cause of rejoicing, rather than of the alarm that prompts to invert a tumbler over a small aperture, or fill a slight crevice in the washstand, with paper or cotton ? Quite recently there appeared in the daily papers an account of an excursion through one of the immense sewers of Paris, where the odor is said to be so offensive that it can never be forgotten. Is it not strange that this should be permitted if sewer gas was there regarded as the chief and common cause of typhoid fever ? But sewer gas is also said by many to be the general cause of diphtheria and scarlet fever. By reference to the New York Board of Health Report, for the week ending January 11, 1879, it appears that 274 cases of scarlet fever, and 65 of diphtheria, were returned, and only 8 of typhoid fever ; nevertheless, the logical inference deducible from this statement will probably be contested. The deaths from scarlet fever, for the month ending Dec. 28, 1878, were, by the same report, 228, from diphtheria 101, from typhoid fever 24, showing a fair correspondence with the number of cases returned.

My own experience, and that of most physicians who have had much experience in typhoid fever, shows a larger number of cases and deaths among males than females ; yet the latter, more domestic in town or country than the former, are far more exposed to the influence of what are now regarded by many as the almost exclusive agents in the production of the disease. Practitioners and writers are generally in accord that the disease is most common between the ages of fifteen and thirty-five years ; it will be found, however, that a very large proportion are between seventeen

and twenty-one years, the most fatal too of all periods, especially when the patient is large and has grown up rapidly ; and it is just at this time that young men are prone to out-door life, even when business does not call.

The readiness of some physicians to attribute to sewer gas an attack of typhoid, if any smell denoting its presence in a house can be detected, is surprising, when every physician knows that this is only an exceptional event. To get over this difficulty it is now declared in some quarters that, although the smell be wanting, the gas is present, and capable of producing an attack. This is an unfortunate discovery, if it be a discovery ; for it would follow from this, that, after much expense in the effort to banish gas where it was known to exist, from the sense of smell, it might still remain, although imperceptible, and keep the family in painful suspense. But have we any tangible and conclusive proof of this lurking, unforeseen danger, and, if it really exist, is it not remarkable that in the thousands of houses, where the odor is annoyingly perceptible, it appears to do so little mischief ? Yet after all there is consolation and hope for the people ; for it is announced that typhoid fever and, as may be supposed, with it, diphtheria and scarlet fever, can be stamped out. The whole system of existing sewerage is now discovered to be radically wrong, and it is declared that it ought to be torn out, root and branch. In this announcement the dishonest contractor would surely have the largest share of hope and consolation, were it not that a lynx-eyed, intelligent, and fearless Reform Association confronted him. To this association, in fact, are due the thanks of the community

for having unearthed the nefarious acts of more than one contractor, and exposed to the light of day the wretched workmanship and worse material, that they fully believed had been forever concealed from human vision. Let the actual system, then, have justice done it, in material and construction, before entering upon the trial of another, involving the expenditure of untold millions still further to oppress the renter and tax-payer.

But what is to become of the rural population who, without sewer gas, suffer more from epidemic typhoid fever than the residents of cities? Let them, we shall be told, be more careful in regard to local filth, contaminating both air and water or food. This advice appears to be tendered in all sincerity and charity; but whether the people of any well-ordered farming district in the counties adjacent to the city, where the Quaker element, proverbial for neatness and order, so largely prevails, will receive, with due humility and gratitude, the advice so generously proffered, remains to be seen. Admitting, however, that the charge is in some instances well founded, or indeed that every farm-house in the largest county adjacent to Philadelphia has, within or without, the sources of infection, what would it all amount to, diffused over so large an area, when compared to the limited space on which the city is built, with its sewers, water-closets and cess-pools, aggregating, in number, tens of thousands, and many of the latter, too, in close proximity to the dwelling, in an offensive condition, and rendered more so by serving as receptacles for every description of putrefied and putrefactive substance? And, again, has the butcher never any unsalable, perhaps semi-

putrefied, meat on hand? has the green-grocer no decayed vegetables or fruits to dispose of? and have the hucksters nothing of a semi-putrid character to stow away, in barrels or boxes, in cellars or vaults, or to have covered up from sight in a filthy stable-yard or outhouse?

The sources, then, of local contamination would seem to be infinitely more numerous in the city than in the country, yet without discouraging those who promise to stamp out disease. The real difficulty is when an epidemic of a violent and extended character starts up, as it has been known to do, in certain mountainous parts of Virginia and Tennessee, in their almost pristine condition, without the semblance of filth to account for its origin. It is evident then that, whatever cases of typhoid fever may have been traced to sewer-gas or local contamination, some other cause or causes must be sought to account for the frequent and disastrous outbreaks in the rural sections; and this, it is clear, was in the mind of that sagacious observer and logical thinker, Dr. Charles Murchison, when he declared his belief in the origin *de novo* of typhoid fever, placing himself, in this point, upon the platform occupied by all the celebrities named in the earlier part of this paper.

Directing our attention once more to the health of our city, as exhibited by the Board of Health from week to week, we see no rational cause for anxiety or alarm; for while the deaths from pneumonia, for the last five weeks, have been very numerous, exceeding by far the total number caused by typhoid fever, diphtheria and scarlatina, taken together, the city, as to general health, may still be, as it has been for many

long years, regarded as one of the most healthy of large cities. In the present Board of Health the people, we believe, may have entire confidence, composed as it is of gentlemen of exalted character, and fully interested in the important and responsible work they have in charge; presided over, too, by a gentleman whose fitness for the post he occupies is acknowledged by every one who has examined the recent annual reports, in the preparation of which he is doubtless aided by the indefatigable Registrar. That nothing will be left undue by the Board for the prevention of disease, so far as that is possible, and for the removal of nuisances, even if not productive of disease, we have full confidence. The circulation of exaggerated reports, in relation to any disease, should be avoided, as the tendency is to engender a degree of anxiety and inquietude, whose only effect is to diminish vital force, and thereby render the system more liable to the influence of a deleterious agent.



C A S E

OF

UNUNITED FRACTURE OF THE TIBIA OF TWELVE  
YEARS' STANDING ; PRESERVATION  
OF A USEFUL LIMB.

By

WILLIAM S. FORBES, M.D.,

DEMONSTRATOR OF ANATOMY IN THE JEFFERSON MEDICAL COLLEGE, SENIOR  
SURGEON TO THE EPISCOPAL HOSPITAL, ETC.

[Read March 5, 1879.]

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I BRING this man before the college for the purpose of showing the Fellows that he has preserved a very useful limb, though his fractured tibia has failed to become consolidated.

He is a seaman, a captain's mate, 36 years of age, and in full health. He came into the Episcopal Hospital three weeks ago, on account of an ulcer on his leg. His ulcer is now well, and before leaving the hospital I have asked his permission to present him for examination here to-night. He has, as you will observe, an ununited fracture in the middle of the right tibia; there is no bone thrown out from the upper or lower fragment. The line of fracture is quite a transverse one, and there exists a short, dense, fibrous deposit between the two fragments, which holds them closely together, so that while there is an appearance of consolidation, yet there is motion be-

tween these fragments to a limited extent. He can walk about with but a very slight limp, and with entire freedom from pain, having no support from splint or bandage, and rarely using a cane. He has often walked from ten to fifteen miles a day, and has several times carried packages weighing nearly fifty pounds from the upper part of Richmond down to our Navy-yard, a distance of nearly five miles, and then has returned with them, walking the entire distance. He says that the only feeling of discomfort he experiences is that, after walking long, there is a feeling of something pulling at the outer side of his knee. On pointing out the locality, I found it to be over the superior articulation of the fibula with the tibia. In connection with this indication, I find that his fibula was not broken at the time of his accident, and that it serves as a splint to his broken and still ununited tibia. Manifestly the fibula assists to support his superincumbent structure, and hence the sensation of pulling at the upper tibio-fibular articulation.

The patient's accident happened just twelve years ago. In a gale of wind, off the Delaware Capes, he was struck by the end of a broken rope, in the middle of his leg; the soft parts were cut to the bone, and the extremities protruded. Three days after his accident he entered the Pennsylvania Hospital, and remained there for fourteen months; he then left the hospital for the country, some twenty miles distant. He was wearing at this time tin splints around the leg, and moved about in a rolling chair.

Three years after the accident he laid aside his splints and got out of his chair, and after using a crutch for a short time, abandoned it for a cane. A

little over three years after his accident, he went to sea as the mate of a vessel, and has never since been laid up or disabled in any way. He has never been the subject of syphilis, and has always been in the enjoyment of excellent health. Although this is the twelfth year since this man's accident, there is no change in the limb, nor in his capacity to walk on it, since he abandoned his crutches, nine years ago. The tibia is no larger and no smaller, apparently, than an ordinary, healthy tibia. Just at the line of fracture, and a little above and a little below the line, the bone is covered by a dense, fibrous tissue, serving as a stay-ligament to hold the fragments in apposition; this ligament is only around the false articulation, and performs the part of a dense capsular ligament to the two fragments of the tibia. It is made very tense when the patient stands on that leg or walks.

I cannot discover that the bone is much shorter than its neighbor of the opposite side. The affected extremity is just half an inch shorter than the sound one, and this shortness no doubt, to a great extent, depends upon absorption of the extremities of the fragments of the tibia. The fibula of this side, which was not broken, but which is attached by ligamentous structure to the extremity of each fragment at the seat of the ununited fracture, is perfectly healthy in every respect. It is not bent or curved, although the feeling of "pulling," which the man feels after a long walk, shows that this fibula assists somewhat to support the body. And, although this ununited fracture of the tibia has existed twelve years, and the limb has been well used for nine years without any artificial support beyond the occasional use of a cane, the

neighboring fibula is not enlarged to any perceptible degree. In this respect this fibula differs from the one to be found in the museum of St. Thomas's Hospital, spoken of by Mr. South, and mentioned by Dr. Norris (see Contributions to Practical Surgery, p. 60), in which the increase in size was great, the bone having performed the office of the tibia in supporting the body.

The occurrence of ununited fracture in this case cannot be satisfactorily accounted for. The man had no taint or vice of system. He had enjoyed, and has continued to enjoy, apparently excellent health. His appetite was good, and he appropriated his food; and he received proper treatment at the hands of excellent surgeons. There seems to have existed in this man what Sir James Paget has heretofore observed: "A simple defect of formative power; a defect which cannot be explained, and which seems the more remarkable when we observe the many changes which may at a later time be effected, as if to diminish the evil of the want of union." No other one of his bones has ever been broken.

## ILLUSTRATIONS

OF THE

# VALUE OF TEALE'S METHOD OF FORCED DILATATION OF THE SPHINCTER VESICÆ IN INCONTINENCE AND EXCESSIVE IRRITABILITY OF THE FEMALE BLADDER.

By

ADDINELL HEWSON, M.D.

[Read April 2, 1879.]

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IN the beginning of 1876, my attention was directed to an article in the number of the London Lancet for Nov. 27, 1875, contributed by Mr. T. Pridgin Teale, of Leeds, for the reason that anything from the pen of that original thinker and ingenious surgeon always serves to stop me in my usually hasty glances over the medical journals of the day. This article was on "Forced Dilatation of the Sphincter Vesicæ in Incontinence and Excessive Irritability of the Female Bladder."

Mr. Teale there stated that the substance of his essay had been read before the Leeds Medical Club, in November, 1873; before the West Riding Medico-Chirurgical Society, at Leeds, in February, 1873; and before the Yorkshire branch of the British Medical Association at a meeting at Scarborough, in November, 1874. The Lancet article gave no details of Mr.

Teale's mode of procedure, but was rather occupied by his claims to the originality of the idea; and none of the above references, from which I could hope to get full details or even a more definite account, were then accessible to me. But as I was at that time much occupied in investigating the analgesic effects of rapid breathing in surgery, it occurred to me that such effects would be specially serviceable in this plan of treatment proposed by Mr. Teale, and I made some memoranda in reference to it at the time.

Shortly afterwards, and within the period of twenty-four hours embraced between the noons of the 21st and the 22d of February, 1876, I was urgently summoned to no less than three different cases of this distressing affection. They were all characteristic, especially as to the distressing nature of the symptoms.

CASE I.—The first was that of a lady, about thirty years of age, residing ten miles from Philadelphia, with whose medical history I had been somewhat familiar from her early childhood. Soon after her having gotten married and so shamefully abused by her husband that her father had to take her home and obtain a divorce for her, I had to treat her for a severe vaginitis and endometritis. At the outset of this trouble (gonorrhœa), and before I saw her for it, she had had an attack of great irritability of the bladder, followed as she described by a discharge of "black gravel" which gave her relief to the bladder symptoms. At my interview with her, she also stated that she had always suffered very severely in coitus with her husband, and that such acts were constantly followed by bleeding from the vagina and pain at subsequent micturition. On the occasion of my being called to treat her for the gonorrhœa, I made careful examinations, both digital and with the speculum, and found both sets of labia much swollen, and the remnants of the hymen exces-

sively tender, so that I had to proceed with great care and gentleness to make the examinations perfectly. I thus detected prolapsus and retroflexion, as well as all the symptoms of vaginitis and endometritis. For these I used douches with the douche bottle and double catheter, and medicated sponge-tents, and had the satisfaction of leaving my patient in a short time restored, or rather freed from these troubles, and I ceased to attend her regularly.

Several months later (viz., in October, 1875, when I saw her again), she seemed remarkably well and had grown fleshy. She stated however that she had at times some trouble in her menses, and a vaginal examination then revealed slight retroflexion but no induration or hypertrophy of the uterus. For this condition I introduced a whalebone, intra-uterine, stem pessary, which she wore with satisfaction for three months, when it was removed. My next summons was in the afternoon of February 21, 1876, to her country home, where I found her suffering intense agony from inclination and inability to urinate. She then told me that she had been very well, since I had last seen her, up to the last flux of her menses, which had come on whilst she was away from home travelling for amusement; that the flow was then arrested on its second day by her being exposed to severe cold, and that, since, she had suffered much with lumbar pains, headache, constipation, and tenesmus; the last symptom always when at stool. She had also had a great deal of ere-thism, with itching and burning at the entrance of the vagina, for the relief of which she had always felt compelled to scratch the parts very severely. At this time I found much tympany with tenderness of the abdominal walls, and inability to move without her sufferings being greatly increased. Her bladder was evidently not much distended, and the introduction of the catheter removed not over half an ounce of high-colored urine—which I found free from blood or pus. The use of the catheter was effected without difficulty or delay, but caused the patient to scream with agony. The instrument was held tightly by the contractions of the

sphincter, and after its withdrawal the old symptoms were as severe as ever.

An inspection then showed the usual button form of projection of the mucous membrane of the orifice of the urethra to be found in most cases of acute sphincterismus with inflammation of the parts, and I considered the case a very fair one for Teale's treatment. I therefore proposed to the patient, as I had both Atlee's and Ellinger's uterine dilators, as well as a special dilator for the female urethra, in my satchel, to resort to Teale's treatment after I should get her insensible to pain by the rapid breathing. To this she readily consented, as she was still suffering as much as before the catheter had been used, and as she was satisfied that no relief was to be expected from the catheterism alone. Her distress was indeed so great that I directed her to try the rapid breathing before she should attempt moving on the bed. This she did, and at the end of three minutes by the watch she was so relieved of her hyperæsthesia as to allow her to fix herself as I wished, viz., on her left side, close to the edge of the bed, that is, in the ordinary obstetrical position. When this breathing had produced so much *insensibility to pain* that she could only recognize the contact of my fingers whilst I was pinching her with my nails as hard as I could, I proceeded to make a thorough examination, and then attempted to introduce Weisse's urethral dilator; but owing to the fleshy state of the nates I found it difficult to manipulate with so short an instrument. I therefore substituted for it Ellinger's uterine dilator. This I passed through the whole length of its blades into the bladder, without any difficulty or annoyance, the rapid breathing being steadily kept up all the time. I then slowly effected such dilatation as would allow me to pass my index finger, between the blades, into the bladder, without causing any pain or bleeding.

This operation occupied about fifteen minutes, and during all this time she was free from pain, although, as she said, she knew I was constantly touching her. The dilatation, so effected, was followed by most complete relief, and she had

no desire to micturate during the following half hour, whilst I was at the house.

No applications or dressings to the parts were ordered, and I left directions simply for care about her diet and her remaining in bed. The next day I received a letter from her father (who was a physician), saying "My daughter was restless and occasionally complained of pain throughout last night, but appears to be considerably better to-day." Since then she has never had any return of her bladder troubles, and her cure was undoubtedly the result of the forced dilatation.

CASE II.—The next case I shall report, was that of a widow lady to whom I was summoned in the city on the morning of February 22, 1876. She had been under my care frequently before, for various troubles, essentially due to prolapsus.' This, the prolapsus, was frequently attended by great irritability, and even by catarrh, of the bladder; it had never existed, however, before to any great extent. This time her sufferings with her bladder were such as to make her act and look like a maniac, and nothing could induce her to try the rapid breathing to lull them. I therefore proceeded to make a digital examination; this showed the uterus healthy and in its natural position, but the bladder, and especially its sphincter, excessively sensitive to the touch. I was now told for the first time, and that by the aid of the memory of her mother, that she had had more or less constantly this irritation—a fact which she had denied to me before—ever since the birth of the first of her six children, in a tedious labor sixteen years before. She further stated that her urine had always, since then, been loaded with what proved to be phosphates.

These conditions having been determined to exist, I proceeded at once to employ Teale's method of dilatation, unaided by any means of producing insensibility. This required much more time than the other case, and occasioned, without doubt, most intense sufferings to the patient, she making constant efforts to draw herself away from the

instrument. These efforts were nugatory, however, for, anticipating them, I had passed the instrument (Ellinger's), without any warning, quickly into the bladder, and had secured it there by means of its catch, well slid down, so that every time an extra effort was made by her, I had but to let go the instrument, and it was not disturbed. In this way I took over twenty minutes by the watch to make a dilatation such as would allow of my passing my index finger into the bladder whilst the dilator was there. I then desisted. There was no bleeding, and the patient expressed herself as entirely relieved of all inclination to be constantly passing her urine; but there was great tenderness along the line of the operation. To remove this, I applied some wet clay to the parts there, and directed its renewal after each attempt at micturition. These attempts were now not at all frequent, and were always attended with a free flow of urine. At the end of three days of this mode of treatment, she was not disturbed at all at night, and had not more than three or four calls to urinate during the day.

A vaginal examination made at the end of the tenth day, during all of which time the earth dressing had been applied, showed that there was no tenderness or thickening along the urethra, or at its orifice. Since then this patient has never had any signs of sphincterismus.

CASE III.—My third case of sphincterismus, that is, of those which occurred in the aforesaid period of twenty-four hours (viz., February 21-22, 1876), was that of a robust, healthy-looking lady, thirty-eight years of age, who had been married sixteen years without ever having conceived. She had consulted a prominent gynaecologist six years after her marriage, as to the cause of her sterility. He pronounced it due to prolapsus and retroflexion, and, to remedy these difficulties, introduced a Meigs ring pessary. He allowed her to wear this for three years without any vaginal examination. Then, when she complained of her bladder symptoms and desired the removal of the pessary, he, having been

all that time in attendance on her, told her for the first time that the instrument ought to have been removed within six months after its insertion. It was then removed, and shortly afterwards she ceased to be his patient. Two years later she placed herself under my care for vaginitis and irritability of bladder which she said had been disturbing her ever since the ring was introduced, or had been worn but a short time, at least. She said that she had ever since then been compelled to pass her urine two or three times during the night, and was always annoyed with the inclination when walking in the street.

The vaginitis then existing (that is, at the time of my first visiting her) was removed by injections and applications per speculum, which instrument revealed indurations and thickenings all around where the ring had been two years before. This was assigned, in my mind, as the cause of the irritability of the bladder, and topical applications were continued until this culminated on the 22d in an intense attack of irritability and of incontinence, which had originated three days before in a tedious shopping expedition. When I saw her this time, she was exhausted with her sufferings of the night before, and was willing to submit to any operation which could give her relief, but was positive against the induction of any form of insensibility, having been assured by many that she had a fatty heart, which would kill her under such circumstances. I used the Ellinger dilator at once, with the patient reclining on her left side as one in labor. This I did very cautiously, first getting the blades of the instrument into the urethra, then, waiting some minutes on account of the violence of the spasm of the sphincter, I slowly approximated the handles with the same precautions as in the other case, and thus made my dilatation a steady and forced, rather than a rapid one. It occupied me over half an hour. And when I got the dilatation complete, I left the instrument in its dilated state in the bladder until all resistance to it had ceased. I then withdrew it after closing its blades, and my patient expressed herself as entirely relieved.

The reason of my caution was to avoid laceration, and in this I was successful. Before leaving the patient, I directed the constant application of clay to the parts, but, on my visit the next day, I found that it had not been used, and that the patient had had some attacks of sphincterismus; these were, however, at more prolonged intervals of time than those immediately preceding the operation. I therefore determined to leave the case without any topical applications, and watch what progress it could so make. This progress was slow but satisfactory; there were frequent intimations of recurrence of the irritability, but no positive paroxysm, and the single dilatation eventually wrought a dissipation of all the thickening of the tissues there. Frequent vaginal examinations made this very apparent, and proved the dissipation complete in a year's time. This was an exceedingly trying case for Teale's method. The patient had been brought up from childhood amidst all sorts of quackery, and was ready to imagine herself the victim of any malady which the last comer might suggest as explanatory of her sufferings. If, therefore, the operation could not be a rapid one, and performed without suffering, it may be deservedly considered a perfect success. She has now had none of her old trouble for three years.

Since the occurrence of these three cases in one day in my practice, I have been more diligent than before in my inquiries, and have found many cases to treat in the same way, which were analogous, and yet different as to their causes and pathology. Of these cases, I shall now give, as briefly as practicable, the histories of three, which, in contrast with those already given, will show more forcibly the value and extent of application of Teale's proposal.

CASE IV.—The first was the case of a widowed lady, who came under my care last August (1878), for a large fibro-cystic tumor, filling the abdominal cavity to such an extent as to

give her a girth at the navel of thirty-eight inches. This tumor had been diagnosed by the late Dr. Washington L. Atlee, two years before, as growing from the broad ligament and body of the uterus, and had been steadily increasing since then. She complained to me of troubles in the bladder early in my attendance on her, but was satisfied as I was with the idea that these arose from the pressure of the growth.

Some five or six weeks later, when the tumor had diminished several inches in its circumference, this diminution following the continuous application of earth over the abdomen, the symptoms of irritation of the bladder were more distressing than ever, but these I also naturally attributed to the sinking of the growth in the pelvis as the result of its diminished size, and therefore resorted to essentially palliative means for relief. They failed; the irritation grew worse and worse. I then made a vaginal examination, specially to determine the state of the bladder. Here I found acute sensitiveness, most positive sphincterismus, without any thickening or induration, but with characteristic button-like projection of the mucous membrane of the urethra. This examination was conducted with the patient on her left side, and my mind was quickly made up as to my proper course, which was to induce analgesia without any delay, and then use the dilator. The rapid breathing accomplished its desired result in about seven minutes. I then readily dilated the urethra through its whole length by Ellinger's instrument. There were none of the bladder symptoms remaining when the patient recovered from the breathing—which was instantly on my withdrawing the instrument. The clay was then applied, and continued as a precautionary measure for several days. There has never been any return of the bladder symptoms since the operation, although the patient's tumor has been steadily decreasing at a rate which has caused an average decrease of two inches per month in her greatest girth during all that time. Her figure and the activity of her movements are now such as to make the fact of her having a tumor scarcely perceptible.

CASE V.—In contrast with this ease as to the probability or improbability of action of the tumor on the bladder, I will present here another, that of a married lady, aged 43, still menstruating, who consulted me about troubles in her bladder a year ago. The symptoms of sphincterismus were not at the time distressing, but on examining her abdomen I found a large fatty growth in the right side of the abdominal walls, the handling and moving of which gave her distress. I could hardly span it with the thumb and little finger of either hand. The patient attributed this growth to a blow she had received on the parts some years before, and said that the bladder symptoms developed with it. Under these circumstances I directed the use of the clay to the tumor to effect its dissipation, in hopes that when this was accomplished, the irritation of the bladder would disappear. The result was to dissipate the tumor entirely in the course of four weeks' use of the dressing. The bladder symptoms, however, persisted for some months, until one afternoon I took Prof. Wallace to see the ease as one of cure of a tumor by the earth. Knowing my patient's temperament, I went unexpectedly, but prepared to dilate her urethra. Of this I informed her after the Professor had made a full examination as to the tumor.

Unfortunately I could not then induce her to make the proper exertions for the production of analgesia, and had to proceed without it. In the lateral posture I could not, nor could even Prof. Wallace recognize the origin of the urethra by digital exploration. We both even so failed with her in the dorsal decubitus. All that we could perceive, in either way, was a well-defined depression when the urethral orifice should be projecting. The patient's bed was in a very unfavorable position for ocular exploration; we therefore resorted to artificial light, and so detected a point in the depression, into which I succeeded after some effort in passing the point of my Ellinger's instrument. The patient suffered excessively as I slid the instrument into the bladder, and still more so as I attempted to separate its blades. I, however, in spite of all her resistance, effected complete dilatation in fifteen minutes'

time, by the watch, and this too without causing any laceration. The earth dressing was directed to be used here, its renewal always to be made after each micturition. She has never had any return of the trouble since the operation, now over two months. She ceased to use the dressing after the fifth day.

In discussing the possible cause of the trouble with my patient recently, she recalled to mind the fact of its first occurrence having followed the birth of her first child, twenty-three years before, and that she had never been able to sleep a whole night since then without being disturbed three or four times to micturate. She also then stated that she had been frequently treated in former times by applications of nitrate of silver to the parts. Hence probably the conditions we found about the orifice of the urethra.

This case is to be contrasted with Case IV., by the fact that we had the sphincterismus clearly developed, as is most usually the case indeed, by a mechanical cause, and that most positively independent of the existence, or of changes in the growth, of a tumor. The trouble was in both essentially spasmoidic, and not associated with thickening.

CASE VI.—The last case which I shall report here this evening was one of the most severe and protracted I have ever met with. The patient was forty-five years of age, and had suffered constantly since the birth of her first child, twenty-three years before, having been obliged to evacuate her bladder as frequently as every half hour, night and day, during all that period of time. She had, when I first saw her, the expression of the most extreme anxiety and despair. She told me that she had been for a long time under treatment with caustic applications, by two prominent members of the

profession in our city; also by some in New York and elsewhere; and that the only inducement for her to seek my services was the success I had had with the clay dressing in the case of her friend with whom she was staying. She was excessively nervous and emaciated, as was to be expected in such a patient, and it took me over ten minutes to bring about analgesia by rapid breathing as a necessary preliminary to a thorough examination. This examination demonstrated, as before intimated, the sphincterismus without thickening of the tissues of parts neighboring the urethra, but with well-marked retraetion of those parts.

I then introduced the dilator (Ellinger's), and passed its blades completely into the bladder, without disturbing my patient, and then, keeping her still in the same state of insensibility to pain, I soon (in five minutes' time by the watch) dilated them so as to allow of my index finger passing between them into the bladder. Then I withdrew the instrument, and whilst the patient was still breathing rapidly I covered the neck of the bladder and orifice of the urethra with a stiff paste of clay and water. The patient after this was directed by me to discontinue her rapid breathing, and the towel which had been placed over her face to prevent her mind being diverted from the efforts in respiration was removed. To my question now as to her having felt me, she promptly answered, "Yes, everything you did;" to that, if I hurt her? she said "some," evidently not in a definite manner. In fact, talking further, she admitted that all the sensations, those simply of touch and those which ought to have caused pain, were alike; and that her dread of suffering made her give the affirmative answer to my questions. When she was completely restored to sensibility, she was most emphatic in saying "no" to the question if she had any of her old distress.

I left her in bed with directions that she should be kept quiet, and allowed to go to sleep, if possible, without any anodyne. I called in the evening and found my patient in great glee. She had gone to sleep shortly after I left, and

had slept soundly for fully an hour. This sleep was so very sound from its outset that her friends in the room soon left her, and went down stairs, meaning to return whenever they should hear her move. When she awoke and found herself alone, and totally free from pain, she cautiously slid out of bed and put herself on the chamber, to see if she was perfectly relieved. After sitting there some moments without any of her recent indications of urinating, she arose, and to her great surprise found that her water had passed from her without causing any sensation. Her impulse, as she afterwards stated to her friend, was to jump over the bed for delight. She, however, instead, took hold of the nearest chair and pounded with it with all her might. This brought her friend and all the family running up into the room in the greatest alarm. There they found her standing on the floor with bare feet, and laughing with the greatest satisfaction on account of her utter freedom from pain of any kind. This operation was done on the 12th of November last (1878), and I saw the patient six times during the following ten days without having occasion to prescribe for her, or even to control her diet. Since then I have heard frequently of her at her home, where all say she is very happy and grateful for the perfect relief she has gotten. I have delighted in the result most heartily, and feel that if I had had no other case of the kind, it alone is one well worthy of being made widely known.

I have entered into full details of the mode of procedure which I have adopted in all of my cases, for the reason, as before intimated, that I did not know those of Mr. Teale's method, and do not wish in any way to leave opportunity for improper inferences or to false representations, if any might be made from my paper, of that gentleman's plan. I wish, as the title of my paper shows, to give the fullest credit to Mr. Teale for the idea of this mode of treatment, and, as

my opening paragraphs indicate, to make known my ignorance of Mr. T.'s *plan* of procedure. I have operated on all of my cases save one (Case V. of those here reported), with the patient reclining on the left side, a position which I was long ago taught in Dublin to prefer to all others for such operations, even for the purpose of using the female catheter. Its advantages are, not only that the patient is freed from the annoyance of having to face her surgeon, but is prevented from seeing what is going on, and from having her person exposed in the least; and, as can be seen from any accurate anatomical drawing,

[Velpeau's plate of a vertical section of the female pelvic organs exhibited.]

the orifice of the urethra is much more accessible in that position than in any other. It looks back, and enters the tract of the canal at almost a right angle from behind forwards; hence when there has been much retraction provoked by changes of tissue, like those resulting from the frequent use of nitrate of silver, the orifice is most readily entered from behind. The entrance once effected in this manner, by an instrument, the latter can be readily and quickly glided along the passage by simply moving its handle or near extremity forwards in the segment of a circle, provided that the curve of the instrument is looking backwards.

This done, with Atlee's dilator, the slightest approximation of its handles secures it in the bladder, as a consequence of the inverted form of a cone which its blades make; whereas, with Ellinger's instrument, the parallel relations of its blades make it always necessary to have some retaining power like

that of a sliding catch to guard against its being displaced. With Weisse's instrument, when it can be readily used, as on a thin patient, the third blade presents a serious objection by pressing forward on the tissues in front of the urethra, if it has been inserted with that blade looking forwards, as is necessary in the lateral decubitus, or backward, in the dorsal position, when it compels the lateral blades to press on those parts. These faults of Weisse's instrument show the advantages to be gained by using the other dilators when inserted from behind, with the curves of their blades looking towards the sacrum; they, on being opened, move under or behind the arch of the pubis, and not only can do no harm by their pressure, but exert pressure at the points and in the directions needed.



[After the reading of the preceding paper, Dr. WILLIAM GOODELL said :—]

I have performed the operation of forcible and rapid dilatation of the urethra some fifty times at least, and have so often cured by it bladder troubles of long standing, that I wish to add my testimony to that of Dr. Hewson as to its efficieney. The female urethra does not possess a true sphincter, but, from the meatus urinarius exclusive to the neck of the bladder inclusive, it is surrounded by a network of muscular fibres, which firmly constringe it, and act the part of a powerful sphincter. It is the spasmodic or the organic contraction of this broad belt of fibres, that makes woman more liable than man to urinary disturbances.

While warmly advocating the operation of rapid dilatation of the urethra, I wish to point out certain risks attending it, to which Dr. Hewson has not adverted. One is incontinence of urine. This result I have not thus far seen in any of my own cases, because I dilate simply to the extent of the girth of my index finger, which is of medium size, and no further. But I have twice met with it in cases operated upon by other physicians, and in each the thumb had been forced in. This experience has led me to think that there is danger in making the dilatation too great. The other risk is that of hemorrhage, either external, from the rent often made in the upper margin of the meatus, or internal—into the bladder—from the rupture of the tense and thin fold of mucous membrane often found at the neck of the bladder. I have several times met with the former, and have been obliged to use styptics. On one occasion I was compelled, in a pregnant woman, to close the rent by a metallic suture, passed deeply in, before I could check the bleeding. I have occasionally met with cases of internal bleeding, but, although one of them lasted for three days, I have not found it needful to interfere by styptic injections.

I would further remark that in the selection of cases for dilatation, it is important to distinguish between purely hysterical cases, and cases in which there exists a real tonic contraction of the urethral muscular fibres. For while the operation almost always benefits the latter, it will sometimes increase the urinary troubles in the former.



## RECOVERIES FROM MENTAL DISEASE.

By  
ISAAC RAY, M.D.

[Read May 7, 1879.]

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RESPECTING the curability of insanity, a wide difference of opinion has always existed, and, notwithstanding the improvements made of late years in the care and treatment of the insane, this difference seems to be as wide as ever. It might be supposed, at first sight, that the establishment of hospitals for the insane would have furnished the requisite information, but the only effect these institutions have had thus far, has been to give us a keener sense of our ignorance of the matter. A new phase of the subject has been presented by Dr. Earle, Superintendent of the Hospital for the Insane at Northampton, in his recent Reports ; and so confident is he of the correctness of his conclusions, and so many are the commendatory notices he has received, both at home and abroad, that they are entitled to a careful examination.

In his last as in his two next preceding reports, Dr. Earle has examined the matter of *recoveries* as exhibited in the statistics of our hospitals for the insane, and has been struck by some things so different from what might have been naturally expected, that he is led to seek for an explanation. He finds, as a general fact, that thirty or forty years ago, the proportion of recoveries, or cures as they are sometimes called, was

much larger than it has been of late years, and he proceeds to explain the fact in a way that is ingenious if not satisfactory. It cannot be denied that to the observer of our own day the record is somewhat startling, for while it appears that once almost every patient recently attacked, recovered, our statistics show that now, taking our hospitals together, hardly half of them have been so fortunate. This remarkable difference Dr. Earle attributes to two sources of error committed by those who reported the larger proportion of recoveries. One of them he describes as "the special characteristics of the person reporting them—his temperament, his constitutional organization, his psychological individuality." In another place he says, alluding to the medical officers of hospitals for the insane, "they are men 'with like passions as other men.' Self-interest, in some instances, and ambition in perhaps all—that ambition, at least, which is manifest in the desire to show as fair a record and as favorable results as are exhibited by colleagues in the specialty—have probably not been wholly inoperative in reporting recoveries from insanity, even though unconsciously to the persons producing those reports." I am not disposed to deny the correctness of the general principle here stated, but I do question whether it has had all the influence which is here attributed to it. Dr. Earle thinks it has sometimes led to a difference in the number of recoveries as reported amounting to 25 per cent.

Again, Dr. Earle says that "the reported recoveries from insanity are increased to an important extent by repeated recoveries from the periodical or recurrent form of the disease in the same person; and conse-

quently the recoveries of persons are much less numerous than the recoveries of patients or cases; and consequently, from the number of reported recoveries of cases, or patients, it is generally impossible to ascertain the number of persons who recovered."

Undoubtedly, these two sources of error have helped to swell the proportion of recoveries as shown by the statistics, but not to the extent supposed by Dr. Earle. In the nature of the case, physicians would not be likely to agree in their reports of the results of care and treatment in every particular instance. Very often the mental condition of a patient cannot be accurately discerned. One may see traces of disease where to another the cloud seems to have entirely dispersed. Whether a certain patient has thoroughly recovered, or only reached a stage of improvement which may prove to be only a remission in the severity of the disease, may be a matter of opinion more than of fact, on which men may differ without showing any lack of intelligence or honesty. We might appeal to Dr. Earle himself to say whether he has not sometimes hesitated to put upon his records the final decision on this point. Recovery from any disease is the terminal point to which the conservative powers conduct the patient by steps more or less obvious, more or less rapid. One stage of the process we call convalescence, but nobody thinks of indicating the precise moment when convalescence passes into recovery. But the patient is discharged before every doubt is removed, and the result must be definitely reported. Here comes in the influence of temperament, of education, of habits of thinking. One man is well aware that some lingering traces of disease remain;

but the healing process is going on, and he believes that it will have a successful conclusion, that it is only a matter of time—a few weeks more or less—and that whether it occurs inside or outside of the hospital, it may be fairly reported as among the results of hospital treatment. Another man differently constituted sees the same case under a different light. He fears that the traces of disease are still strong enough to make him apprehensive of a relapse, and he shrinks from calling that a recovery which may prove, to his discomfiture, only a temporary improvement. The original fault was in undertaking to give statistical expression to an order of occurrences largely conjectural. It may well be doubted whether the terms *recovered*, *improved*, *much improved*, have been of any use not more than balanced by their inevitable tendency to mislead the reader respecting the curability of insanity. But the public have always wished to know particularly what the hospitals were doing, and, as often happens, thought the information sought for was to be found in a parade of vague, general expressions.

Now, while I do not doubt that the mental constitution indicated by Dr. Earle has been a source of error, yet, admitting the fact as he states it, I am not sure that it explains this difference in the results of the early and the latter period of our hospital history. He gives us no reason to believe that the physicians of our hospitals are constituted very differently from those of an earlier period. The world is not now, and probably never will be, without a class of men of the Mark Tapley sort, always seeing things through a rose-colored medium, and prognosticating happy results.

This being so, we are obliged to look elsewhere for even a partial explanation of the apparently greater success of our predecessors in the treatment of insanity.

Nor am I better satisfied with the other factor of the problem, assigned by Dr. Earle; and that too for a similar reason, even if there were no other. Without denying the fact that some patients have been discharged as recovered more than once, we have no reason to suppose that this mode of reporting results has been changed of late years. If it were a matter of mere honesty, we might possibly think otherwise, but the practice in question springs from the nature of the case, and any practicable change can be only one of degree. The matter is burdened with difficulties, and the Doctor himself leaves it in doubt whether he would require us to report no case as recovered which had been so reported on any previous occasion. He certainly prescribes no rule to be observed. In the case of a person who, having recovered, to all appearance, from a first attack, and having showed no sign of mental disturbance for years, becomes insane again, does he hold that that person never recovered really from the first attack, and ought not to have been so reported? If, however, he believes that it was a genuine recovery, why may he not believe that the second apparent recovery was equally so, inasmuch as the evidence therefor is exactly the same—no trace of disease perceptible for years, and no lack of the usual vigor and competence? And if so where is he to stop? Is not the same evidence just as valid in the case of a third, fourth, or fifth attack? If no person is to be reported as recovered who has a subsequent attack,

then we must wait till he dies before we can certify as to his mental condition when discharged, and that will put an end to all our statistics, which, probably, would be the better course.

I have never supposed that the term recovery, as applied to disease, meant necessarily a perfect restoration of the affected organ to its normal vigor and power of endurance. Even after the most satisfactory recovery, there is left, generally, if not always, a susceptibility to noxious influences, which renders the person far more liable to disease than he otherwise would have been. Yet we do not hesitate to speak of recovery from intermittent fever, for instance, though quite sure that it will re-appear on a renewal of the exciting causes. In our general hospitals, it is the practice, I believe, to discharge patients as recovered, without any reference to the possible recurrence of the disease. Undoubtedly, insanity is more likely to recur than many other diseases, but the difference is only one of degree, and therefore I see no good reason for a different rule in the manner of reporting the results of treatment. Many of the instances of repeated recoveries mentioned by Dr. Earle, were *periodical* in their character. That is, the pathological condition was continuous, with intervals when the more demonstrative symptoms had disappeared. These, certainly were not recoveries, in any true sense of the term, but between them and those complete restorations which are followed by years of uninterrupted soundness, there is a class in which the intervals are not so clearly defined, either in length or in freedom from abnormal manifestations. How to

designate these is not very obvious, and men may honestly differ in their conclusions.

But even at the worst, according to Dr. Earle's own showing, this vicious mode of reporting results fails to account for the difference in question. The Doctor illustrates his position by means of the statistics of the Friends' Asylum at Frankford, whereby it appears that, deducting the cases of attacks subsequent to the first, and regarding those patients only as "permanently cured," who never suffered a second time, the proportion of recoveries in recent cases is reduced from 58.35 per cent. to 48.39 per cent. This amounts to a reduction of only about 17 per cent. of the larger number, which is far less than the conditions of the question require. And this is, probably, an extreme case, for we doubt if in any other hospital the discharges have been at the rate of "one patient recovered fifteen times; another, thirteen; a third, nine; a fourth, eight; and a fifth, seven." True, it is stated that at the Pennsylvania Hospital for the Insane, "one man was admitted on the twenty-second attack and one woman on the thirty-third; six men and six women on the tenth attack; ninety-four persons on the fifth attack; and one hundred and seventy-two on the fourth." From anything said, it does not appear that a single one of these persons was discharged as recovered more than once. Dr. Earle, however, infers to the contrary, because, as he says, "if a person have a thirty-third *attack* of a disease, it necessarily follows that he had previously recovered from thirty-two attacks." This is a tremendous jump at a conclusion based on the vague signification of a single word. We learn from Dr. Kirkbride that no periodical case

was ever discharged as recovered. In his last Report he explained his views on this subject, in a manner eminently fair and reasonable.

"When," he says, "an individual suffering from insanity is relieved from all indications of mental unsoundness, returns to his home and family without any developed eccentricity, resumes his ordinary relations with society, attends to his business with his usual ability and intelligence, for a year, or even a much less period, we have no hesitation in recording such a case as 'cured,' without any reference to the future, about which we can know nothing. We have no power to insure any case, or to say that there may never be another attack. We have no right to assert that a combination of circumstances like that which produced the first, may not cause another; that ill health, and commercial revulsions, and family sorrows, and the many other causes that may have originally developed the disorder, may not again bring on a return of the same symptoms, just as they may produce them in one who has never had an attack of the kind. Five thousand six hundred and ninety-five of those received here never had an attack before. Whatever induced the disease in them, certainly may induce it in those who have already suffered from the same malady, for we cannot expect one attack of insanity to act as a prophylactic, and, like measles or small-pox, to give immunity for the future. But this new attack is no evidence that the patient was not cured of the previous one. If the patient then is well, in the sense in which he is considered well from an attack of typhoid fever, or dysentery, or rheumatism, or a score of other maladies, when another attack is developed, it is as much a new case, and the recovery is a cure as much as it would be if he suffered from any other form of illness, and it ought to be so recorded."

As then neither the temperament of the physician, nor the repeated counting of periodical cases, accounts

for the larger proportion of recoveries, in the earlier times, we must look for the explanation in another direction, and we shall find it in various agencies that have come into operation in later times.

Fifty years ago, when State hospitals for the insane began to be established, the main purpose for which they were to be used was that of receiving the insane inmates of the jails and almshouses, whose sad condition had arrested the public attention. It was not long before the benefit of hospital treatment became so obvious that it began to be sought for other classes of the insane, slowly increasing at first with the slow growth of confidence. As might have been expected, the earliest of these was that of the violent and dangerous cases that could not be restrained by any domestic arrangements consistent with comfort or decency. Even for the care of such it required a little more than an average intelligence and freedom from prejudice to see in the hospital one of the improvements of the age, destined to meet a fearful exigency in the human condition. It was not until a later period that patients of a different character—the quiet, the desponding, the melancholic—resorted to the hospital. They had excited no fears and conformed somewhat to the domestic requirements. There was no pressing necessity for their removal from home, and the superior fitness of the hospital for the care of such cases was seldom recognized. Now we all know that in the form of disease first mentioned we have the largest proportion of recoveries.

And this result was promoted, unquestionably, by a circumstance too much overlooked in these discussions concerning the curability of insanity. Fifty

years ago the country furnished a larger proportion of patients, as compared with the city, than it ever has since. Their general health was not appreciably impaired, they had spent their days working in the open air, and their natural forces had not been weakened by sensual indulgences. They were in the best possible condition to meet the inroad of mental disease. During this period a remarkable change has been going on in the distribution of our population. It is estimated on good authority that one-third of our population live in cities of 50,000 or more. Seventy-five years ago there was not one city of that size, and fifty years ago there were not more than ten. This great change in our social condition has been accompanied by a steady depreciation of the conservative powers of the constitution, strongly manifested in the physical condition of the patients admitted into our hospitals for the insane. The number attributed to *ill health*, in the table of causes usually given in the annual report, has been steadily increasing.

No array of figures, however, can convey such an impression of this remarkable difference as that derived from a personal observation embracing the whole period. Dr. Bell had good reason for saying, in his Report of the McLean Asylum for 1840, "that the records of this asylum justify the declaration that *all cases certainly recent*—that is, whose origin does not, either directly or obscurely, run back more than a year—recover under a fair trial." In quoting this passage Dr. Earle admits, to use his own words, that "no abler man, intellectually, and no more conscientious man, morally, has been engaged in the specialty of psychology" in this country, and this being so, we

are left in the dark how to explain this statement of Dr. Bell, which Dr. Earle must regard as gross exaggeration of the truth. It might be attributed perhaps to the influence of a sanguine temperament and the practice of curing the same person more than once, did not the sequel, as given by Dr. Earle himself, suggest a very different reason. It seems that in after years Dr. Bell reported a much smaller proportion of recoveries, the proportion pretty steadily diminishing during the latter fifteen years of his service. That is to say, as the community became more and more enlightened as to the beneficent purposes of the asylum, it was more and more resorted to by patients of the less violent kind, and by others affected by those incurable forms of the disease, whose care could be merely custodial. And this leads us to an incident in the history of insanity that must not be overlooked in our estimates of curability.

About forty years ago, when our country was rising from the financial depression that began in 1836, and the means of intercommunication had been greatly increased by railways and ocean steamers, a change began in the social habits of our people, as just intimated, manifested in a distaste for the quiet pursuits of a country life, in surrendering to the allurements of the city, and plunging into the struggle for the great prizes of life. The vitiated atmosphere of crowded streets and dwellings, the seductive appliances of ease and luxury, the mental strain required in the race of competition, the tumult of emotion under the frequent alternations of fortune, all these serve to lower the conservative forces of the system and invite the invasion of nervous disease. The tables

of mortality tell the story in the figures assigned to apoplexy, paralysis, and cerebral congestions, and the records of our census show it in the steadily increasing amount of insanity in the last semicentennial period. Not only did insanity become more frequent, but it also became less curable. And even new forms of disease appeared, and the wards of our hospitals were pervaded by a class of cases utterly unknown before. But little more than thirty years have elapsed since that remarkable affection, General Paralysis, became known to American physicians, and there is no reason to suspect that it had been previously overlooked. Dr. Bell, who first observed it in Europe in 1845, satisfied himself, after a most thorough examination of the case books of the McLean Asylum, that up to that period no instance of it had been observed in that institution, though since then it has been frequent enough.

And we have now other cerebral affections which, once seldom seen in our hospitals, are no longer an extraordinary sight. I refer to those cases which seem to be closely affiliated to general paralysis, but do not present some of its characteristic symptoms. The same may be said of another affection, passing under the various names of Bell's disease, acute delirium, and typho-mania, which is eminently and speedily fatal. In these forms of cerebral disease the patient is insane, certainly, but the insanity is only an incident accompanying a deeper and graver affection, and they of course swell the death record, and to the same extent lessen the proportion of recoveries. Now, therefore, in considering the question in dispute we shall leave out of the account a very import-

ant factor if we overlook this change in the pathological character of mental diseases.

Before leaving the subject I take the opportunity of saying that the experience of our hospitals, as given in their annual reports, is a fallacious test of the curability of insanity. Between this objective result and the facts on which it seems to be founded, there is really no necessary relation. If we had a right to believe that every patient discharged as *improved*, *unimproved*, or *stationary*, was incurable, then we might take the construction usually placed on the record. But we well know that such discharges indicate not the incurability of the disease so much as the impatience, or perversity, or straitened means of the friends. Nothing can be further from the truth than the idea that they represent the results of a fair trial of hospital treatment. It is not at all unlikely that under such a trial of recent cases, at least twelve or fifteen per cent. would be added to the number of recoveries. In order to approach a correct estimate of the curability of insanity, two requisites are still needed, viz., that every case should have a fair trial, and that the subsequent history of every case discharged should be ascertained. Without these, and we are not very likely to have them in our day, we can never have an estimate of the curability of insanity with any claim to scientific accuracy.

These then, I believe, are the points which I have fairly made, viz.:—

I. Those qualities of temperament which lead men to unduly magnify their achievements are as common at one time as at another.

II. The practice of reporting cases instead of per-

sons has not been confined to any particular period, and therefore, while it may vitiate our estimate of the curability of insanity, it cannot make the proportion of recoveries larger or smaller at one period than at another.

III. Cases marked by high excitement entered our hospitals in a larger proportion to those of an opposite character fifty years ago than they do now.

IV. Under the influences of highly civilized life the conservative powers of the constitution have somewhat depreciated, and to that extent impaired the curability of insanity.

V. During the last fifty years, cerebral affections in which insanity is only an incident, have been steadily increasing, and thus diminishing the proportion of recoveries.

## REMARKABLE CASE OF CONGENITAL VENTRAL GESTATION,

THE SUBJECT BEING A GIRL SIX YEARS OLD, WHO RECOVERED AFTER  
THE DISCHARGE OF THE FETAL MASS FROM HER ABDOMEN, AND LIVED SEVENTEEN YEARS.

REPORTED ON BEHALF OF DR. JOHN L. ATLEE, OF LANCASTER, PENNSYLVANIA,  
WITH REMARKS ON THE CONDITION IN QUESTION.

By  
ROBERT P. HARRIS, M. D.

[Read June 4, 1879.]

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IT will be remembered by the Fellows of the College, that, at our meeting in April, a curious specimen of what has been variously denominated "Fœtus in Fœtu;" "Fœtus by inclusion;" "Cryptodydamus;" "Double Endocymien Monster;" "Monstrosity by inclusion," etc., etc., was presented to the Mütter Museum, on behalf of Dr. John L. Atlee, by his son, Dr. Walter F. Atlee, and that, on motion of the latter, the College submitted the specimen to me for examination and report. In response to this request, I have prepared the following record.

In the work of the late Dr. Washington L. Atlee, on "Ovarian Tumors," and in the chapter on "dermoid cysts of the ovary," I found a record of the case in question, with the very important omission of its early history, the account being mainly directed to the appearance and dissection of the fœtus. Fortu-

nately, after some delay, the notes of the case, which were prepared nearly thirty-five years ago, were found, and its subsequent history added to them and sent to me, so that the record is now quite full and complete.

Possibly some observers might desire to classify the growth in question with the dermoid tumors, a disposition of it which I cannot accede to, as it too closely resembles the human form to be other than a product of conception, unless we are prepared to believe in the possibility of spontaneous generation. Under the denomination of "dermoid growths," we have single cysts, containing more or less of a skin-like lining, with hairs, fatty matter, teeth, and anomalous bones. We have also polycysts, containing masses of hair, each perhaps of a different shade of color, and all unlike that on the head of the subject. And we have amorphous, flesh-like masses, associated with the hair, teeth, and bone formations, which have been termed "dermoid tumors." But I am not prepared to enlarge the classification, and admit as *dermoid*, those peculiar tumors which I believe to be *fœtal* in formation, because composed, in part, of tissues, organs, and bones, which more or less closely resemble those of the *fœtus* in *utero*. It may be sometimes difficult to decide whether the mass is or is not truly *fœtal*; but in the large majority of cases, the body is either negative, or clearly *fœtal* in resemblance.

I. The subject of the anomaly in question, was Ann, daughter of Mr. Solomon Oswald, of York, Pennsylvania, aged six years, who presented in very early childhood an appearance of irregular conformation, and enlargement of the abdomen. She was of delicate build, with fair complexion, light hair and eyes, and belonged to a consumptive family.

In the progress of her disease, an abscess formed in the lower portion of the epigastric and upper part of the umbilical regions, which opened, and a mass presented itself, which in time protruded through the abdominal wall. The physicians of York, fearing to explore this, applied ligatures on several successive occasions to the protruding portion, with the effect of removal by strangulation; under which process a very offensive effluvium was given out. Soon after these removals, the whole remaining mass escaped, and this was preserved in a bottle of alcohol. It was then discovered that the inclosing sac still contained a mass of hairs, and, as the patient was by this time in a very low state, she was carried upon a pillow to Dr. Atlee's, in Lancaster, for his professional advice, and the specimen in the bottle submitted to him for opinion. This was in the summer of 1844.

Dr. Atlee found a weak, delicate, emaciated girl, with an abdominal fistula, and hair protruding from it. He removed the hair, and, having washed and dried it, found that it weighed two drachms. It was soft, light colored, and of varying lengths, the longest portions measuring from ten to twelve inches. After the cyst was empty of its contents, the girl's health began to improve, but it was soon discovered that the sac in some way communicated with the stomach, as evinced by the escape of articles of food through the fistula. Dr. Atlee writes: "Notwithstanding the care which was taken to allow nothing to be eaten but soft and easily digestible food, she had been so much indulged previously, that she insisted on having berries, and green corn; and I well recollect, on one occasion, seeing a large quantity of whortleberries, and on another, of grains of Indian corn, which passed in that way."

When her general health had sufficiently improved, the child was taken home, and attended to by her father, who was a very intelligent druggist. The cyst gradually contracted to a fistula, which continued open until she was 14 or 15, when it closed up, leaving a button-like projection about the size of a quarter dollar, which always remained. The girl de-

veloped into a fine and handsome young lady, menstruated at the age of twelve, and continued to be regular until she fell a victim to phthisis pulmonalis at the age of twenty-three.

The mass contained in the bottle, was sent to Philadelphia to be dissected and prepared by the late Prof. William R. Grant, by whom it is described as follows, in Atlee on Ovarian Tumors, page 199.

"The tumor, at first sight, appears to be an amorphous mass; . . . the upper and back portion, resembling in structure the scalp, is covered at present with a few scattered, straight hairs. Its size is  $3\frac{1}{2}$  inches in length, and 2 in greatest width; weight 2 oz. Anterior to the scalp is an irregular horizontal fissure, supposed to be the rudiment of a mouth. Below this are three perfect temporary teeth, loosely attached to the soft parts or gums of the lower jaw. The exposed and prominent teeth are lateral incisor, bicuspid, and molar, superficially resting on alveoli of an imperfect jaw, within the body of which are imbedded one or two rudiments of other teeth, seen through an opening at the base. The maxilla has a ridge corresponding with the symphysis; it is movable on the left, but ankylosed on the right side.

"Within the mass, I have traced with some difficulty, a skeleton [see Fig. 1], tolerably perfect though considerably distorted. The cranium, which is large and hard, is united to a short but thick spine; the latter, inflexible, curved backward, and imperfect behind, constituting the malformation known as *spina bifida*, with ridges corresponding with the situation of inter-vertebral cartilages. At the open part of the spinal canal, the cord is distinctly seen giving off filaments; one of these, which I take to be the sciatic nerve, was traced downward to the extremity of the foot. The bones of the head appear as if fused together; no traces of sutures. There are in it two openings, one in front near the centre, and the other corresponding with the situation of the posterior fontanelle. Each of these openings is about two lines in diameter; a

small probe can be passed from one to the other, and from either downward through the vertebral canal. The bones of the pelvis are well marked, though misshapen, joined at the pubes by a regular symphysis, covered with cartilage; in like manner to the spine. The acetabula are occupied by the cartilaginous heads of the femurs, round and prominent, with tolerably perfect capsules. The left knee and ankle joints are close together, and the foot turned inward (*varus*). The right

FIG. 1.

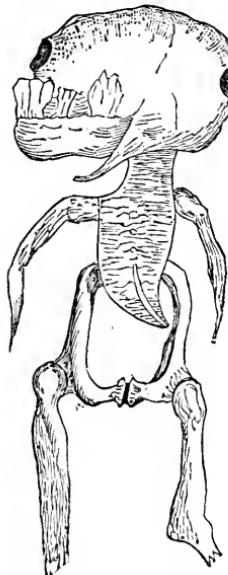


FIG. 1.—Skeleton as dissected from the mass.

side of the pelvis and right hip-joint correspond with the left; but a few lines below, the whole extremity appears fibrinous, as if it had been exposed to the action of an acid, and had become partially dissolved. The rudiments of the upper extremities were also dissected from the mass, though not so perfectly as the lower, from their smaller size and less prominent position. I could discover no vestige of ribs, nor the appearance of any distinct organs or viscera. Covering the bones is a distinct periosteum."

It is very evident from this description of Prof. Grant, who was a skilful anatomist, that the body under inspection was not a dermoid tumor, but a product of generation, a twin, we may say, of the girl within whose abdomen the germinal trace was partially and irregularly developed. The monster by inclusion is certainly one of the most difficult of all the duplex types to comprehend and explain on the principles of teratological science. One germinal or twin trace, would appear, for some unaccountable reason, to maintain a dormant vitality, like that of an unsprouted seed, or severed bud, while the other develops and surrounds it. In the changes of growth and nutrition that occur in the body after birth, the dormant germ appears to be better nourished, is stimulated to grow, and may finally assume the characteristics of a hard tumor, an abscess, or a cystic growth, especially if located in the abdomen; breaking down the health of the subject, and in almost all such instances ending fatally. In the case before us, there is no mention of any ascitic or encysted fluid having been detected, and I presume that there was no such complication to endanger life. The probability is, that the foetal growth was much more superficially located than is usual in such cases, and hence the discharge of it during life, and the favorable termination of the case.

After a careful and extensive search for parallel reports, I find no authentic record in which a congenitally inclosed fetus was removed from the abdomen during the life of the child with recovery. I will now present a condensed record of some of the most remarkable cases of fetus by inclusion, that have been published during the last seventy-five years.

II. 1805. The first in order is the well authenticated case of the boy Amidée Bissieu, who died at Rouen, France, at the age of fourteen. As soon as he was of an age to indicate it, he complained of pain in the left side of his abdomen, and a tumor in this locality was early detected. His general health was not materially affected until his thirteenth year, when fever set in, the tumor became large and painful, and his stools finally fetid and puriform. At the end of three months, he plainly labored under a sort of pulmonary consumption, shortly after which period he passed by stool a ball of hairs, and, at the end of six weeks more, died.

After death a foetal cyst was found, attached to the transverse colon, and opening into it by a recent ulceration; hence the escape of hairs, etc. The sac contained a brain, spinal marrow, and large nerves, muscles degenerated into a kind of fibrous matter; and a skeleton, consisting of a head, spine, pelvis, and the rudiments of extremities, with a short funis inserted into the mesocolon. (*Edin. Med. and Surg. Journal*, vol. i. 1805, page 377, from *Bulletin de l'École de Médecine, Paris*.)

III. 1808. Case reported by George William Young, Esq., of Bucklesberry, England, in *Medico-Chirurgical Transactions*, vol. i. 1809, p. 234. The subject was a boy who died February 25, 1808, at the age of nine months and seven days. At birth, John Hare appeared to be healthy and well formed; but soon became troubled with frequent vomiting, and a prominence became apparent in the upper part of the abdomen to the left of the umbilicus. The child was first seen by Mr. Young when three and a half months old, at which time he appeared plump and healthy. He was fed exclusively by nursing; vomited at intervals of a week or ten days; appeared to suffer pain at times; passed green stools, and slept imperfectly. A round, smooth tumor was plainly distinguishable to the left of the median line, below the margin of the chest, and reaching below the level of the umbilicus (in the epigastric and umbilical regions), but inclining to the left. The tumor was tense, movable, and gave the sense of fluctuation.

The child was again brought to Mr. Young when nearly eight months old, seven weeks before its death. It was by this time a mere skeleton in appearance, and its face was one of age and anguish. The tumor had developed until fifteen days before, when the girth of the abdomen reached 36 inches. For seven days before this, the child was in constant suffering, and death was expected: the contour of the abdomen then suddenly changed, becoming flattened and softened; the child was easy for two days and nights; voided large quantities of urine for about a week; and size correspondingly diminished; vomiting ceased; child became ravenous for food, gained strength, and improved in appearance. Cyst soon began to refill; girth eighteen and a half inches at observation, and tumor projecting; lost appetite, vomiting returned: prior to an attack of emesis, a pouch appeared to fill in the epigastrium, and to be pressed by the ribs against the tumor. This was found after death to be the stomach, elongated and over-lying the tumor. Girth at time of death,  $22\frac{1}{2}$  inches.

*Autopsy.*—No fluid escaped on opening the abdomen, which was occupied by a large and nearly spherical tumor, appearing to be distended with fluid; liver much diminished in size; pyloric extremity of stomach lying on upper part of tumor; pylorus scarcely distinguishable, and free communication with duodenum; ascending and transverse colon in front of and adherent to tumor. Could not find any trace of cicatrix in cyst to mark seat of rupture. Eighty-eight ounces of a limpid, green-tea-like fluid evacuated from the cyst; the balance of its contents was a fleshy mass, which proved to be an imperfectly formed male foetus, covered with sebaceous matter: when this was removed, the skin appeared sound and healthy. The foetus had no head or brain, but in place thereof a dark, red, fleshy mass of a structure resembling the *pia mater*. The containing cyst and foetus were united at the umbiliens to a fleshy cone (*an exomphalus*) containing several convolutions of intestine. The foetus had short, thick, ill-shapen and abnormal arms and legs; a penis, with an im-

perfect urethra; a cleft scrotum; no processes of the spinal vertebræ, and no spinal canal or cord, but in their place a dark red substance, broad at the shoulders, and tapering to a point toward the sacrum. On the tegimentary border of this, chiefly toward the pelvis, were a number of fine, short, erect hairs.

IV. 1809. Case reported by Dr. Edward B. Gaither, of Springfield, Kentucky. Subject, a girl two years and nine months old, residing in Washington county, and supposed to be dropsical, who died in three hours after Dr. G. was called in. When only a month or two old, a hard growth was discovered in her abdomen. Nine months before death, she began to decline in health and become emaciated: she was of the ordinary size for her age.

*Autopsy.*—Nearly a gallon of a yellow fluid was evacuated from a cavity in the abdomen, in which was found a monster weighing 1 pound and 14 ounces, having no connection with the sac. The sex was regarded as female. It had no eyes, nose, or mouth, and the extremities were abnormal and incomplete: the body was 7 inches long, and thighs 6 inches. (*New York Medical Repository*, 3d Hexam. vol. i. 1810, page 1.)

V. 1814. Case reported by Dr. Edward Phillips in a letter to Sir Benjamin C. Brodie, which was read before the Medical and Chirurgical Society of London, July 18, 1815. Subject also a girl, and was two and a half years old when she died. She resided at Andover, England, and her enlargement was first discovered in the third month after birth. This gradually increased in size, and she began to show evidences of ill health. Two months before death, she became subject to frequent and distressing attacks of vomiting, began to increase more rapidly in abdominal girth, and to lose flesh more decidedly: A large, hard, regular tumor could be detected in the left side of the abdomen. She died of exhaustion.

*Autopsy.*—The tumor was found to extend from the edge of the diaphragm to the pelvis, and to be strongly attached to

the left kidney. Several cysts containing a limpid fluid were opened. The solid portion of the tumor contained a substance of a muscular character, with bones, those of the tarsus and tibia being recognized. (*Trans. Med. and Chirurg. Soc. London*, vol. vi. 1815, p. 124.) . . . . Some might claim this as a non-fœtal growth, and classify it with the dermoid tumors. If the bones had not been decidedly similar to those of the fœtus, this objection would hold good.

VI. 1814. Case reported and published in a special memoir, by subscription, by Mr. Nathaniel Highmore, of Sherborne, Dorsetshire, England. . . . Thomas Lane, born December 21, 1798; died June 9, 1814, aged 15; appeared healthy until seven years old, when he had violent pains in his bowels; was sick three months, and body became enlarged, then somewhat subsided, but was always afterward visibly larger than natural; was often restless at night, and always complained of pain in his abdomen. For six years he was in reasonable health; in March, 1811, had violent pain in the abdomen, and was sick a week; then recovered, and was unusually well for a year, or until April, 1812, when he had an attack of pain for a few days. In January, 1814, he began to decline, having had shivering and general pains. In March, he was attacked with diarrhoea, violent pain, and a disposition to faint, after which he slowly failed, and died in three months.

*Autopsy.*—When the abdomen was opened, a large, irregular, but somewhat oval, tumor presented itself, occupying portions of the epigastric, umbilical, and left hypochondriac regions. This, upon being removed, was found to weigh  $4\frac{1}{2}$  pounds, and to contain a well-marked but imperfect fœtus, connected with the sac by a short thick funis. The fœtus had no head, but bore a long lock of hair from the nape of the neck; it had two upper extremities—the right well formed, the left short, deformed, and having but three fingers. There was only one inferior extremity, and the foot was flat, turned in, and had six toes. Sex of fœtus female. Two engravings of it appear in Mr. Highmore's rare monograph.

VII. 1814. A third case was reported for this same year, by Prochaska, of Austria, and very closely resembling that of Dr. Gaither. Subject, a girl, began to fail at two years old, and died at two years and eight months; a month younger than the subject of Case IV. . . . The sac was found after death to contain eleven ounces of fluid, and a monstrosity. (*London Medical Repository*, vol. vi. 1816, page 330.)

VIII. 1825. Case reported by Dr. Elbert Curtis, of Tompkins County, New York. Subject, a girl who died with a fœtus in utero, when three years, nine months, and ten days old. When born, she had hair on the mons veneris, and an unnatural enlargement of the labia pudendi. About a year before death, her parents noticed an enlargement of the abdomen, and she had attacks of pain. Her abdomen continued to enlarge, with occasional attacks like labour-pains, but there was no soreness to the touch; a hard tumor was felt in the left hypochondrium. On the 14th of November, 1825, she had a sudden pain, and died in a few minutes.

*Autopsy*, made in the presence of four physicians.—Uterus irregular in shape; about twelve inches long, and from three to five in width; adherent to one kidney, diaphragm, spine, etc., quite firmly, down to the psoas muscle. Weight of uterus and attached kidney, 4 pounds, 10 ounces. This organ, when opened, was found to contain the following, viz: a brain, lungs, heart, diaphragm, liver, sacrum, etc. Sacrum quite natural in form, but no appearance of ossification. No traces of features; stringy substances of different colors appeared to be passing into a state of putrefaction. Dr. Curtis says in conclusion: "Not a doubt remains but that it was the principal, if not entire, form of a human fœtus, born with her to all appearances." (*N. E. Med. Journal*, vol. xv. 1826, p. 31; from *Boston Med. Intelligencer*.)

I have thus given, in outline, the records of eight cases, in which the fœtus was developed within the abdomen as a species of congenital tumor. Many

more might be added to the list, but these will suffice as illustrations of the condition and its results. We see that pain, sleeplessness, the discovery of a hard body in the abdomen, attacks of vomiting and diarrhoea, dropsical effusion, and ultimately extreme emaciation and death—with, in some instances, the discharge of hairs, puriform fluid, and tissue shreds, from the bowels—are the marked features of this class of cases. It is a mistake to regard them simply as curiosities of pathological or embryological study, as they have an important bearing in the training and perfecting of our skill in the diagnosis of morbid growths within the abdominal cavity, so often a rock of stumbling to men of even large experience. It would seem somewhat remarkable, that in no case of congenital abdominal pregnancy does the fact of the possibility of the existence of a foetus as the basis of the tumor, appear to have been even a matter of conjecture on the part of the physicians in attendance. In view of the literature of the subject, and of the progressive histories of M. Dupuytren's patient, and of the boy Amidée Bissieu (Case II.), who passed hair, puriform matters, and flesh-like shreds from their bowels, it would not appear a matter of great difficulty to decide upon the nature of the diseased condition.

The first important requisite in making such a diagnosis is to know the history of apparently parallel cases, and all the points of the one to be considered. It was in this way that M. Velpeau made his celebrated diagnosis in the case of serotal tumor, at the Hôpital de la Charité, in 1840, before an audience of about five hundred students and physicians, stating

that he expected to find in the scrotum of the man before them the rudiments of a foetus, and verifying the correctness of his judgment, after removal and dissection. It appeared to be a very marvellous diagnostic feat at the time, and gave its author a world-wide reputation as a man of skill. No doubt some persons thought it a happy conjecture, but what were the facts?

In 1826, there appeared in the *Bulletin des Sciences Médicales* of Paris, an account of an operation upon the scrotum of a child, by Mr. Fatti, of Braunau, Austria. The child was born with an enlarged scrotum, which increased in size as he grew, until it was five inches long by two and a half in thickness. Mr. Fatti laid it open, and discovered the ribs, vertebral column, two lower extremities as far as the knees, and the two orbits of a foetus. Again in 1829, the same journal presented a similar report, from Prof. Wendt, of Breslau, of an operation performed by him on a Silesian boy, seven years old. When the patient Gallochat came under the care of Prof. Velpeau, he was a man of 27 years of age, and stated that he had had the tumor from the time of his earliest recollection. M. Velpeau, by correspondence with Dr. Senoble, of Esternay, learned that the latter had been consulted about an enlargement of Gallochat's scrotum when the patient was a baby of four months old; and that the growth had enlarged as the boy grew up. There was also to be seen a tuft of hair protruding from a kind of ulcer at the posterior part of the tumor; and a reddish tubercle presented itself at the bottom of another opening anteriorly. The skin over the tumor was peculiar, and not like that of the scrotum proper:

it was insensible to puncturing, but bled freely when cut ; and besides all these points, the feel of the mass was indicative of the presence of bone. So, like the old story of Columbus and the egg, the matter is very simple when we know how it was done, but the merit lies in finding out how to do it. To know what has been found under similar circumstances and conditions, and to weigh and study with care all the points in the history of a case, will often make a diagnosis simple and unquestionable, where it might otherwise be impossible.

The historical evidences in intra-abdominal tumors are often of more value than palpation, percussion, bi-manual pressure, and the sound, can possibly be without them. I have been forcibly reminded of this fact in two instances within the past year. In one woman, the presence of an ovarian or uterine tumor had been diagnosed, where there was found to be a clear and connected history of a secondary abdominal pregnancy ; and in the other, where palpation led to the suspicion that there was a fœtus in the abdominal cavity, there was no history indicative of pregnancy, but, on the contrary, good reason for regarding the abdominal growth as malignant. Such cases require time for a proper investigation ; and the labor of obtaining a full history, before any other method of examination is entered upon, is not lost. A rapid decision may savor of skill to the unlearned, but is apt to lead into error ; it is therefore wiser sometimes to be slow. It will not be a very pleasing reflection, after having discovered an error of opinion, to find that the case had a history, the full investigation of

which at first, instead of after the discovery, would have made the mistake an impossibility.

Although, as before stated, no one has as yet made a diagnosis, recognizing the existence of a foetal tumor in the abdomen of a young subject, and acted upon it by evacuating the contents of the same under the knife, we are not to regard such a procedure as a matter of impossibility in the future. Such an operation might prove successful; and in a case like that of Amidée Bissieu, a correct diagnosis would not be very difficult. In one of the character of that treated by Dr. Atlee, we can see that an early evacuation by the knife might have been quite feasible. The nearest approach to the removal of a foetal tumor from the abdomen is the operation of excision of dermoid cysts of the ovary in young children, the youngest case on record being perhaps that reported through Dr. J. Ewing Mears, operated upon at the age of six years and a half by Dr. T. S. Bradford, of Augusta, Kentucky, at Higginport, Ohio, in 1871. The little girl recovered in eighteen days. In the cyst were found three pints of fluid, with a collection of hair, fatty matter, and an irregularly-shaped osseous mass,<sup>1</sup>

These dermoid cysts have long been a puzzle to the physiologist, and their origin is still in large measure hypothetical. At one time, the finding of such a formation in the ovary of an unmarried woman was regarded as presumptive evidence that her life had at some time been unchaste; but the discovery of the same character of growths in very young children, and their being even detected in the foetus at and before term, have dissipated this idea, and substituted

<sup>1</sup> Phila. Med. Times, Nov. 1, 1871, p. 84.

for it the belief that the true dermoid cyst is always foetal in origin, and never appears late in life except as the development of a formation originating in utero, and remaining dormant for a term of years. As the development of a foetus within the parenchyma of an ovary is of such rare occurrence that the possibility of it has been repeatedly denied, it is not probable that a dermoid cyst of the same organ would originate by direct impregnation in a nubile subject.

There is too much of a disposition now manifest, to enlarge the area of classification, and claim as *dermoid* many growths formerly regarded as foetal, and having strong foetal resemblances. Thus the serotal tumor removed by Velpeau, already referred to, and believed by him to be truly foetal, has been placed in the list of dermoid growths, and that surgeon ridiculed for his antiquated opinion, that the peculiar structures found therein were the result of a duplex conception, of which the patient Gallochat was himself a part. As described by Velpeau, who says, "the examination of the tumor has enabled me to detect nearly all the anatomical elements of the body of a mammal," there appears to be a wide distinction between it and one of the ordinary dermoid cysts of the ovary. There should be a marked distinction between the partial or complete skin-lined sac, with hair growing from the dermic structure, and containing pieces of bone of no special form, and it may be hundreds of teeth; and the foetal cyst inclosing parts of, or an imperfect foetus, with long hair, growing not from the cyst wall, but from the inclosed mass. The former, although it may be the result of a congenital rudimentary formation becoming matured, is no evidence of a duplex concep-

tion, but the latter can only be accounted for on the principle of one foetus inclosing the dormant germ of another, and subsequently nourishing it into a partial development. We find cysts that are unquestionably foetal, as both form and sex attest it; and we have others that are intermediate between them and the simply dermoid, whose contents and origin must always remain more or less of a mystery.

Although it has been claimed that a perfect foetus was found in the body of a boy of 14, in Genoa, in the year 1699, which had been developing from his birth, I am inclined to take the statement with a great deal of allowance, as it belongs to a period when truth and error were so commingled that it is impossible at this late date to separate them. Besides, we cannot see how such a natural conformation of the foetus could result, when all the circumstances of its growth are so unnatural. An extra-uterine foetus may develop to a full size and perfect form; but how often even here, with all the advantages of placental connection and sustenance, is the child more or less deformed. Certainly then, in the abnormal conditions under which a foetus grows in the abdomen of a child, as compared with its advantages in utero, we should not expect to find a natural development, and I doubt very much, after having examined the records of a number of cases, whether such a condition of perfection has ever been attained, except in the body of the mother. Geoffroy Saint Hilaire says, "the organization of the included foetus is always very simple and very imperfect."

It is the death of the included foetus that endangers the life of the subject. In a few instances on

record, the interior parasite was found in the bodies of adult male subjects, one as old as fifty, who had died of some independent malady, the foetus being free from any trace of morbid or cadaveric change, just as we see to be the case in some instances where extra-uterine foetuses have been carried for years. When the foetus becomes by its death a foreign body, nature rebels against its presence, and inflammation, followed by an abscess, or dropsical effusion, is set up. In some rare cases the bones and tissues have broken down and been discharged, and a spontaneous cure effected; but much more commonly the patient dies, as in the examples given.

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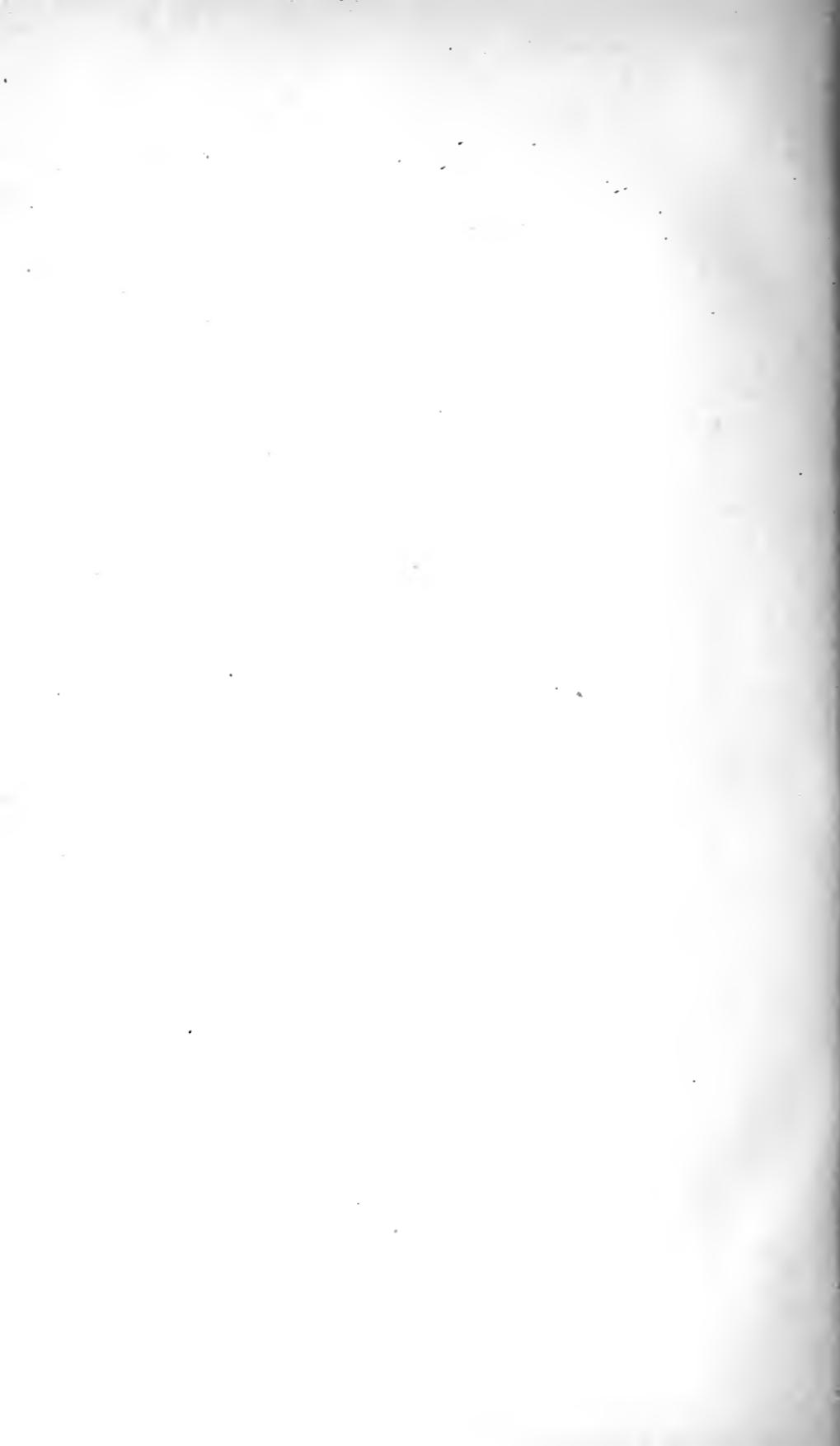
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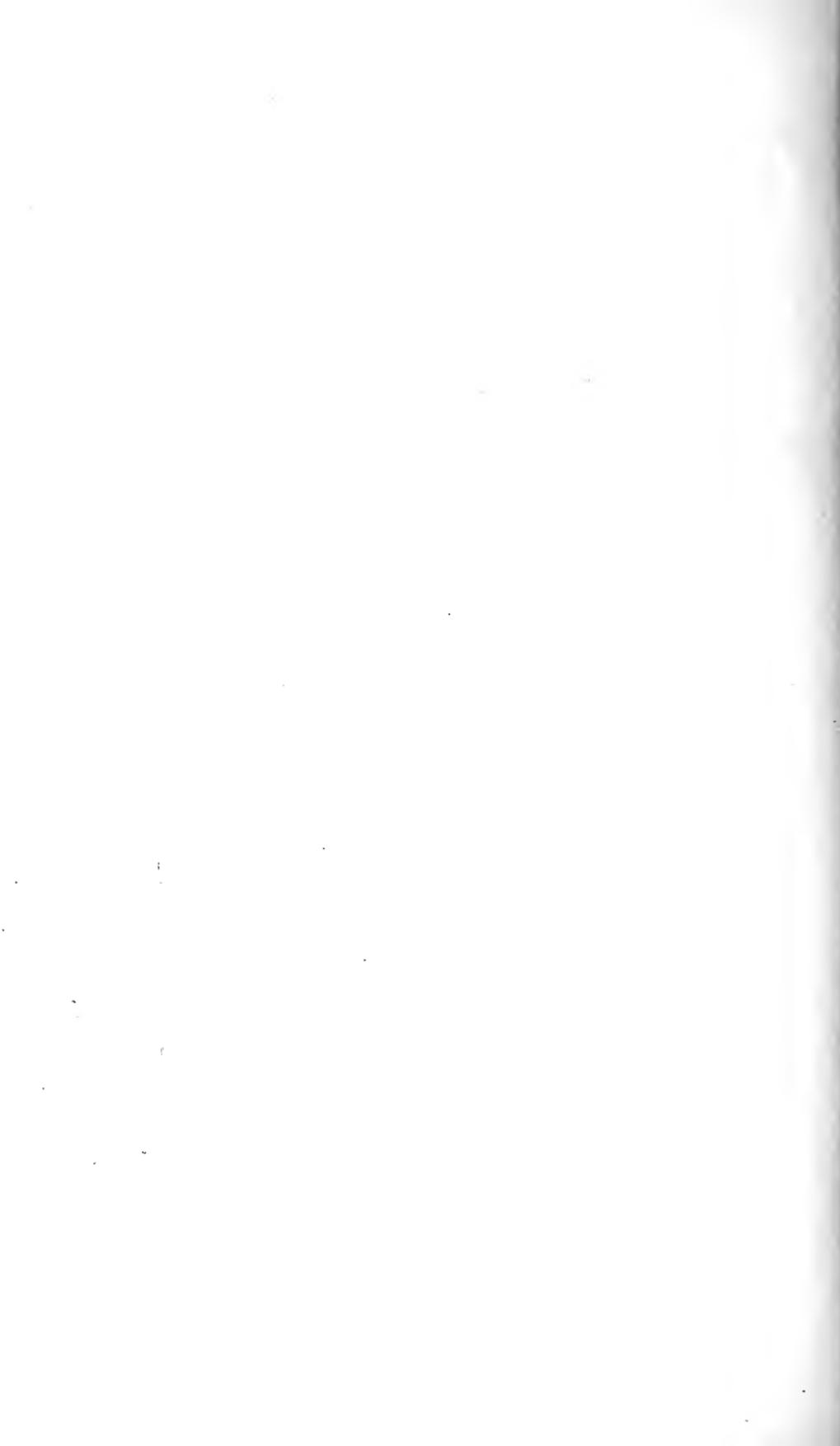
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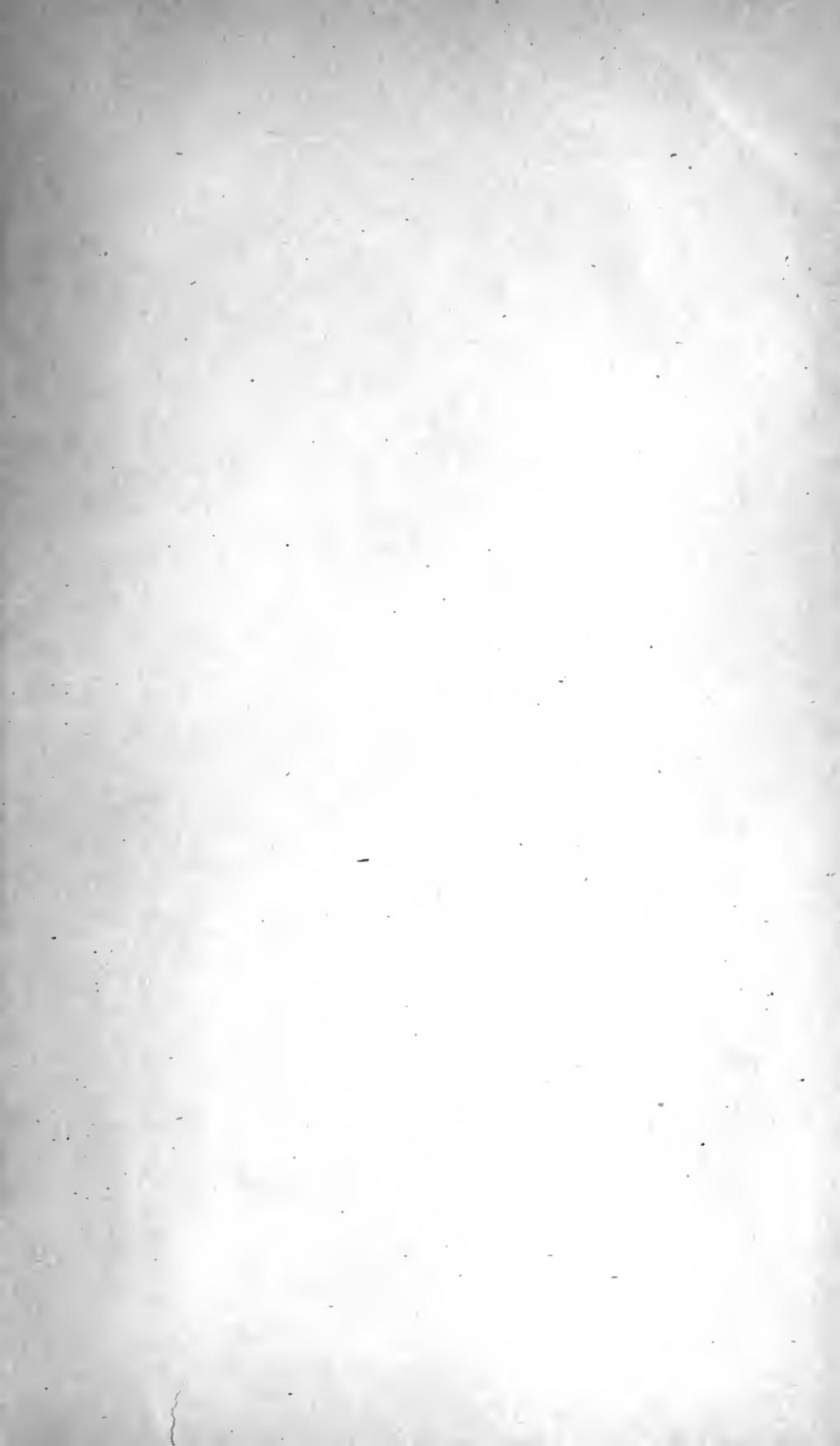
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